

DOES NOT CIRCULATE

NOVEMBER, 1961

# RHODE ISLAND



## Medical Journal

THE UNIVERSITY  
OF MICHIGAN  
DEC 14 1961  
MEDICAL LIBRARY

Volume XLIV, No. 11

Table of Contents, page 607

which curve is longer?



Fascinating . . . how one curved figure seems to be longer than the other—even when you know they're both the same.

Two oral penicillins can be just as difficult to compare. If only the price of the drugs were to be considered, the choice would be clear. But isn't it what a drug *does* that counts?

V-Cillin K® achieves two to five times the serum levels of antibacterial activity (ABA) produced by oral penicillin G.<sup>1</sup> Moreover, it is highly stable in gastric acid and, therefore, more completely absorbed *even in the presence of food*. Your patient gets more dependable therapy for his money . . . and it's therapy—not tablets—he needs.

### For consistently dependable clinical results

prescribe V-Cillin K in scored tablets of 125 and 250 mg.

V-Cillin K, Pediatric, in 40 and 80-cc.-size packages. Each 5 cc. (approximately one teaspoonful) contain 125 mg. (200,000 units) penicillin V as the crystalline potassium salt.

V-Cillin K® (penicillin V potassium, Lilly)

1. Griffith, R. S.: Antibiotic Med. & Clin. Therapy, 7:129, 1960.

Product brochure available; write Eli Lilly and Company, Indianapolis 6, Indiana.

133287

Lilly



WHEN A  
HIGH-  
POTENCY  
VITAMIN  
PRODUCT IS  
INDICATED...

# The RHODE ISLAND MEDICAL JOURNAL

*Editorial and Business Office: 106 Francis Street, Providence, R. I.*

*Editor-in-Chief: SEEBERT J. GOLDOWSKY, M.D.*

*Managing Editor: JOHN E. FARRELL, S.C.D.*

## *Senior Editors*

ALEX M. BURGESS, SR., M.D.

HENRI E. GAUTHIER, M.D.

## *Advisory Board*

(in addition to editors listed above)

JOHN A. DILLON, M.D.

JOHN F. W. GILMAN, M.D.

ROBERT V. LEWIS, M.D.

PETER L. MATHIEU, M.D.

JOSÉ M. RAMOS, M.D.

ROBERT W. RIEMER, M.D.

JACK SAVRAN, M.D.

LESTER L. VARGAS, M.D.

*Owned and Published Monthly by  
THE RHODE ISLAND MEDICAL SOCIETY*

Second-class postage paid at Providence, Rhode Island

Copyright, 1961, the Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island  
Single copies, 25 cents . . . Subscription, \$2.00 per year.

Volume XLIV, No. 11

November, 1961

## TABLE OF CONTENTS

	PAGE
PERIPHERAL ARTERIAL OCCLUSIVE DISEASE, A Panel Presentation:	
I. INTRODUCTION, <i>Jesse P. Eddy III, M.D.</i>	629
II. THE HISTORY AND NATURAL COURSE OF ARTERIOSCLEROSIS OBLITERANS, <i>Stephen J. Hoye, M.D.</i>	629
III. THE DIAGNOSIS OF PERIPHERAL ARTERIAL OCCLUSIVE DISEASE, <i>William P. Corvese, M.D.</i>	634
IV. ACUTE ARTERIAL OCCLUSIONS, <i>Seebert J. Goldowsky, M.D.</i>	636
V. SURGICAL TREATMENT OF CHRONIC ARTERIAL OCCLUSIVE DISEASE, <i>Lester L. Vargas, M.D.</i>	638
VI. DISCUSSION	641
AN UNUSUAL CAUSE OF GASTROINTESTINAL HEMORRHAGE, <i>Robert L. Curran, M.D., AND Thomas Forsythe, M.D.</i>	644
 EDITORIALS	
Peripheral Vascular Occlusive Disease	648
Education in a Free Society and Classical High School in Providence	648
Computers and Medicine	649
Pilgrimage to Padua	650
Inertia, Newton, and Safety Belts	651
The Eighth Oldest State Medical Association	651
 MISCELLANEOUS	
In the Editor's Mailbox	612
House of Delegates, Report of September Meeting	652
Book Reviews	663
 DEPARTMENTS	
Medical TV Shows	612
A Study of Pediatrics	620
Index of Advertisers	664



**IN FUNCTIONAL G.I. AND  
BILIARY DISTURBANCES  
...TO EACH PATIENT  
ACCORDING TO THE NEED**

**DECHOLIN-BB®**

Hydrocholeretic • Antispasmodic • Sedative...to reduce *TENSION* and anxiety-induced dysfunction of G.I. and biliary tracts...and also relieve both smooth-muscle *spasm* and biliary/intestinal *stasis*

butabarbital sodium ..... 15 mg. (1/4 gr.)  
(Warning—may be habit forming)

dehydrocholic acid, AMES ..... 250 mg. (3 3/4 gr.)

belladonna extract ..... 10 mg. (1/6 gr.)

**DECHOLIN®  
with Belladonna**

Hydrocholeretic—Antispasmodic...to relax *SPASM* of smooth muscle of G.I. tract and sphincter of Oddi...and also counteract biliary/intestinal *stasis*

dehydrocholic acid, AMES ..... 250 mg. (3 3/4 gr.)

belladonna extract ..... 10 mg. (1/6 gr.)

**DECHOLIN®**

Hydrocholeretic...to combat *STASIS* in bowel and biliary tract...by activating biliary function with a greatly increased flow of aqueous "therapeutic" bile

dehydrocholic acid, AMES ..... 250 mg. (3 3/4 gr.)

*Average adult dose:* 1 or, if necessary, 2 tablets three times daily.

*Side effects:* DECHOLIN by itself, or as an ingredient, may cause transitory diarrhea. Belladonna in DECHOLIN with Belladonna and DECHOLIN-BB may cause blurred vision and dryness of mouth.

*Contraindications:* Biliary tract obstruction, acute hepatitis, and (for DECHOLIN with Belladonna and DECHOLIN-BB) glaucoma.

*Precautions:* Periodically check patients on DECHOLIN with Belladonna and DECHOLIN-BB for increased intraocular pressure. Also observe patients on DECHOLIN-BB for evidence of barbiturate habituation or addiction, and warn drivers against any risk of drowsiness.

*Available:* DECHOLIN-BB, in bottles of 100 tablets; DECHOLIN with Belladonna and DECHOLIN, in bottles of 100 and 500.

**AMES**  
COMPANY, INC.  
Elkhart • Indiana  
Toronto • Canada



11161

who  
coughed?

WHENEVER COUGH THERAPY  
IS INDICATED

THE COMPLETE RX FOR COUGH CONTROL

cough sedative antihistamine  
nasal decongestant expectorant

- relieves cough and associated symptoms in 15-20 minutes
- effective for 6 hours or longer
- promotes expectoration
- rarely constipates
- agreeably cherry-flavored

® Each teaspoonful (15 cc.) of HYCOMINE® Syrup contains:  
Hycodan®

Dihydrocodeinone Bitartrate	5 mg.	6.5 mg.
(Warning: May be habit-forming)		
Homatropine Methylbromide	1.5 mg.	
Pyrilamine Maleate		12.5 mg.
Phenylephrine Hydrochloride		10 mg.
Ammonium Chloride		60 mg.
Sodium Citrate		85 mg.

Average adult dose: One teaspoonful after meals and at bedtime. May be habit-forming. Federal law permits oral prescription.

Literature on request

ENDO LABORATORIES

Richmond Hill 18, New York

---

## IN THE EDITOR'S MAILBOX

---

State of Rhode Island and Providence Plantations

DEPARTMENT OF SOCIAL WELFARE

DIVISION OF ALCOHOLISM

94 Doyle Avenue

Providence 6, R. I.

DExter 1-5500

October 11, 1961

To the Editor:

I want to take this opportunity to compliment you on the excellent editorial that appeared in the September issue of the RHODE ISLAND MEDICAL JOURNAL titled, *The Rhode Island State Division of Alcoholism*.

As chairman of the Advisory Council for the past ten years and, prior to that, chairman of the Commission for two years, it has been a real source of pride and pleasure to me that our Division has provided ten years of service to the alcoholic in Rhode Island.

This editorial was certainly informative and only inaccurate in a small detail and that is that Governor Pastore appointed the Commission that recommended the formation of the Division of Alcoholism.

Under the leadership of Doctor Capone, we are making progress and soon will have our permanent headquarters in the Butler Health Center.

Thank you again for honoring the Division of Alcoholism by your editorial.

Very truly yours,

LAURENCE A. SENSEMAN, M.D.

Chairman, Advisory Council

To the Editor:

I should like to express the thanks of the Department of Social Welfare and, more particularly, the thanks of the staff of the Rhode Island Division of Alcoholism for the editorial titled, *The Rhode Island State Division of Alcoholism*, which appeared in the October issue of the RHODE ISLAND MEDICAL JOURNAL. This editorial presented the facts about alcoholism in a very clear and appealing fashion.

We felt that you might be interested in further information about our Division. We are in the process of sending out pertinent information to all physicians in the state of Rhode Island. We are

offering to act as consultants to any hospital in the state which admits alcoholic patients in the event they might present administrative or treatment problems. We will serve as consultants to any physician who is interested in or already working with alcoholic patients. We hope in the near future to present a program concerned with treatment of the alcoholic at one of the monthly meetings of the Providence Medical Association.

The Division of Alcoholism, as a state agency involved in the treatment of one of our major health problems, is ready to co-operate in any possible way with the medical profession in our state. Literature is available upon request from the Division. There is also available without charge to physicians, a pamphlet *MANUAL ON ALCOHOLISM* by the Council on Mental Health, American Medical Association, 535 Dearborn Street, Chicago 10, Illinois.

ANTONIO CAPONE, M.D., *Administrator*  
Division of Alcoholism  
Department of Social Welfare

### MEDICAL TV SHOWS

A series of six television shows are being offered by the Woman's Auxiliary to the Rhode Island Medical Society over TV station WJAR on Tuesday mornings at 10 A.M., under the title of "THE WORLD OF PUBLIC HEALTH," as follows:

TUES., NOV. 28 — MEDICAL QUACKERY

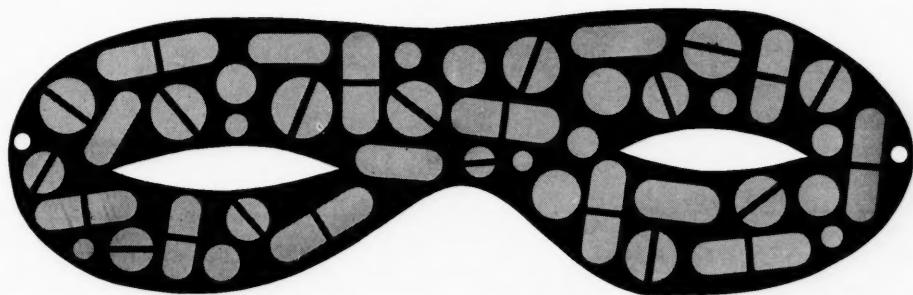
TUES., DEC. 5 — PREVENTION OF BLINDNESS

TUES., DEC. 12 — HEALTH IN THE WINTER

TUES., DEC. 19 — PROBLEMS OF THE AGING

TUES., DEC. 26 — PLASTIC SURGERY

TUES., JAN. 2 — CIVIL DEFENSE



## drugs anonymous

One of the several hastily conceived and potentially dangerous suggestions for reducing drug costs is generic-name prescribing. The proponents of generic-name prescribing claim that it will lower drug costs significantly and—through supervision by the Federal Government—provide quality equivalent to that of trademarked drugs. We maintain that these claims are false. Here are some authoritative answers to the principal questions posed by generic-name prescribing.

### **How much money would be saved if all prescriptions were written for generic-name drugs?**

"The [Rhode Island] Division of Public Assistance examined 10,000 drug prescriptions for welfare recipients for the purpose of determining the actual savings . . . of generic versus trade-name drugs. The drugs had cost \$28,000. Substituting generic drugs whenever possible would have provided a saving of less than 5 per cent. Syracuse has made a similar study of drug costs with comparable results."

Rhode Island Medical Journal,  
January, 1961

### **Are the savings worth the risk of sacrificing quality?**

" . . . it is unsafe [to prescribe generically] because there is not sufficient policing of our standards . . . "

Lloyd C. Miller, Ph. D.  
Director of Revision of the U.S.P.

"The naive belief that, if a product was not good, the FDA would prohibit its sale is just not realistic. . . . it is completely impossible for the FDA to check every batch of every product of every manufacturer. . . . Hence the integrity and reputation of the manufacturer assume unusual significance where drugs and health products are concerned."

Albert H. Holland, M.D.  
formerly Medical Director of the  
Food and Drug Administration

Smith Kline & French Laboratories, Philadelphia



## A STUDY OF PEDIATRICS

### A Report Developed by the National Disease and Therapeutic Index, prepared by Lea Associates, Inc. of Flourtown, Pennsylvania

#### *What is N.D.T.I.?*

ORIGINATED in 1956, the National Disease and Therapeutic Index (N.D.T.I.) is a unique research project designed to provide a continuous flow of reliable, basic facts on private medical practice in the United States. Each of a panel of more than 1,200 physicians reports on all private patient contacts occurring during a forty-eight-hour period once each quarter of the year. Reporting physicians serve voluntarily for a period of four quarters.

Since names are selected randomly, every private practitioner in the country has an approximately equal chance of being asked to participate. Panel members are drawn from forty-eight states and include representatives of all physician specialties engaged primarily in private practice. Great care is taken to insure proper specialty-geographical representation and reporting coverage throughout 365 days of the year.

In return for the invaluable co-operation of individual reporting doctors, data on morbidity, patient and physician characteristics, and general areas of therapy are made available to the profession. Regular quarterly reports are issued to state, county and specialty medical associations, as well as to journals and medical schools. Additional information, beyond the regular reports, is available in the form of special tabulations given without charge upon request.

N.D.T.I. is supported financially by more than a dozen major pharmaceutical manufacturers. (A list of subscribers is available to anyone interested.) The pharmaceutical companies employ N.D.T.I. data primarily in the research and development area as a means of evaluating the need for new compounds which have demonstrated certain pharmacologic actions. Use of N.D.T.I. for advertising or publicity purposes is expressly prohibited by the subscriber contracts.

#### *The Sample*

This report, the second of a series describing different branches of private medical practice, focuses on the specialty of pediatrics. In presenting a profile of United States pediatric practice, told in certain statistical facts, appropriate comparisons are made with general practitioners and other types of specialties.

According to 1961 figures of the American Medical Association, there are over 8,200 pediatricians in private practice in the United States. Pediatricians account for almost 3 per cent of all private practitioners.

This report reflects data collected during the full year 1960. Figures are based on more than 10,000 actual patient-doctor contacts and 582 days of practice. The entire 1960 N.D.T.I. study is a collection of over 145,000 patient-doctor contacts, representing more than 9,000 days of private medical practice.

#### *Patient Load*

Pediatricians saw an average of 20.8 patients per work day during 1960. The average for general practitioners was slightly higher—22.1 patients per work day. In comparison with other full-time specialists, only dermatologists and allergists averaged more patients daily (21.4 and 29.9 patients respectively).

#### *Where Patients Are Seen*

	Ped.	GP
Office	74%	77%
Hospital	13	13
Home	6	7
Other (includes phone)	7	3
	100%	100%

Pediatricians saw almost 3 out of every 4 patients in the office; general practitioners had a slightly higher percentage of office contacts. It is interesting to note the difference between pediatricians and general practitioners regarding the "other" locations of patient contacts. Most of these consist of telephone contacts, presumably with the pediatric patients' parents. Since no other major private practice specialty group has as high a percentage of "other" location patient contacts, the pediatrician probably has more telephone consultations than his colleagues in other types of practice.

#### *Distribution of Patients by Age*

Patient Age	Ped.	GP
Under 1 year	29%	5%
1-2 years	19	4
3-5 years	21	5
6-10 years	20	6
11-20 years	8	12
Over 20 years	3	68
	100%	100%

*continued on page 622*

by

ditions  
ans  
tratefull  
00  
ac-  
on  
att-  
re.er  
al  
er  
e-  
ed  
tsP  
CS  
y  
g  
I

## Why Homer Jackson's work is important to you...

Talking on the radio-telephone is Homer "Bud" Jackson, both a scientist and a hard-working buyer for a company processing Florida oranges into frozen juice concentrate.

He has just made a decision that's important to you. He has analyzed some sample oranges from the grove in the background and found that they have the optimal amount of sugar, of acid,

and are of the proper texture. (Testing for vitamin C comes later.) Homer Jackson knows that these oranges are of a quality to meet the exacting regulations required by the Florida Citrus Commission.

These standards for quality in citrus products are the highest in the world. This is important to you and your patients because juice made from the best

oranges will be nutritionally best for your patients. It will contain abundant amounts of vitamin C and rich, natural fruit sugars.

It's good nutrition to encourage people to drink orange juice. It makes good sense to persuade them to drink orange juice that you know tastes good, has the right sugar-acid ratio, and is packed full of nutritionally important vitamin C.

© Florida Citrus Commission, Lakeland, Florida

## A STUDY OF PEDIATRICS

*continued from page 620*

Patients under twenty-one years of age accounted for 97 per cent of the patients seen by pediatricians; patients under eleven years represented 89 per cent of the total. By contrast, only 20 per cent of the general practitioner patients were under eleven years of age. Infants (under one year) represented the most important single age group for pediatricians.

## Percentage of Patients Seen by Sex

Sex of Patient	Ped.	GP
Female	50%	59%
Male	50	41
	100%	100%

Few specialties have the equal distribution of patients by sex which characterizes the pediatrician's practice. The average for all physicians indicates a 3 to 2 ratio of female over male patient-doctor contacts during 1960. General practitioners follow this pattern, with 59 per cent female and 41 per cent male patient-doctor contacts.

## Number of Referred Diagnoses

Referrals	Ped.
Referred from other M.D.'s	12%
Nonreferred	88
	100%

More than one of every ten (12 per cent) diagnoses treated by pediatricians was the result of a referral from other physicians. In relation to the diagnoses treated by all physicians combined (including GP's), an average of 18 per cent of the diagnoses were referred from other physicians. Most of the pediatricians' patients, and therefore diagnoses, are regular patients compared to those apt to be seen by many other types of specialties, i.e., dermatology, urology, surgery.

## Distribution of Diagnoses Per Patient

Number of Diagnoses	Ped.	GP
One diagnosis	88%	86%
Two diagnoses	11	12
Three or more diagnoses	1	2
	100%	100%

Almost nine of every ten (88 per cent) of the patient visits involved only one diagnosis or reason to see a pediatrician. A further investigation of N.D.T.I. data showed (generally) fewer multiple diagnoses reported with the diagnosis group "Special exams and conditions without sickness," which accounted for almost 39 per cent of pediatricians' patient visits. This group includes such reasons for visiting a physician as prophylactic inoculation or vaccination, well baby and child care, and examinations.

## Leading Diagnoses

The table below ranks the leading individual diagnoses for pediatricians. The diagnosis classification is based on the World Health Organization codes. A rate is shown for each diagnosis, representing the number of such diagnosis reported for each 1,000 patient-doctor contacts.

The leading reason for visiting pediatricians during 1960 was "prophylactic inoculation or vaccination" accounting for 190 of every 1,000 diagnoses reported by pediatricians. "Medical or special exams," which includes well baby and child care, was the second ranking reason for visits to pediatricians, accounting for 120 of every 1,000 diagnoses reported.

Diagnosis	Diagnoses Per 1000 Patient Visits
Prophylactic inoculation, vaccination	190
Medical or special exam (incl. well baby and child care)	120
Otitis media, without mastoiditis	68
Acute upper respiratory infection of multiple or unspecified sites	53
Acute tonsillitis	45
Acute pharyngitis	43
Single birth without mention of immaturity	37
Bronchitis, unqualified	33
Gastro-enteritis and colitis, except ulcerative, age 4 weeks and over	28
Hay fever	20
Asthma	19
Allergic disorders, unspecified	16
Symptoms referable to abdomen and lower gastro-intestinal tract	13
Other dermatitis	11
Other general symptoms	11
Single born, immature	11
Influenza with other respiratory manifestations (non-pneumonia), and influenza unqualified	10
Other diseases of the lung and plural cavity	10

## J. E. BRENNAN &amp; COMPANY

Leo C. Clark, Jr., B.S., Reg. Pharm.

## Apothecaries

## Two Convenient Locations

5 North Union Street Pawtucket, R. I.

140 Central Avenue Seekonk, Mass.

## 7 Registered Pharmacists

Pharmacy License #226

PATRONIZE JOURNAL ADVERTISERS

# The RHODE ISLAND MEDICAL JOURNAL

VOL. XLIV

NOVEMBER, 1961

NO. 11

## PERIPHERAL ARTERIAL OCCLUSIVE DISEASE

### A Panel Presentation

JESSE P. EDDY III, M.D.; STEPHEN J. HOYE, M.D.; WILLIAM P. CORVESE, M.D.;  
SEEBERT J. GOLDOWSKY, M.D., AND LESTER L. VARGAS, M.D.

Presented at the 150th Annual Meeting of the Rhode Island Medical Society,  
at Providence, Rhode Island, on May 3, 1961

### I. INTRODUCTION

JESSE P. EDDY III, M.D., *Moderator*

*Director Vascular Service, Memorial Hospital,  
Pawtucket; Acting Associate Surgeon,  
Rhode Island Hospital, Providence*

MUCH TIME and many words have been devoted recently in Rhode Island to the many aspects of cardiovascular disease. Arterial occlusive disease of the extremities is becoming an ever more important problem in this field. We shall limit our remarks to occlusive disease as it affects the lower extremities, and by limiting our consideration of the broad field of cardiovascular surgery to this small, but important, segment, attempt to bring up to date our general thinking on the subject.

With reference to the subject under discussion I want to state that a number of years ago I went down to the Providence City Hall and found that approximately 3,000 people had died in Providence in a given period, and of that number 400 had died

of coronary occlusive disease, and 400 of cancer. But when one added together all of the people who died of occlusive disease, including cerebral vascular disease, and arterial disease of the kidneys, the total came to approximately 1,200. Thus you can see that the leading cause of death in this community is arterial occlusive disease. It is, therefore, important that we review an important segment of this problem, that of peripheral arterial occlusive disease, as it applies to the lower extremity.

If we speak of coronary occlusive disease as "having a heart attack," one might say equally well that having an occlusive situation in the lower extremities is like "having a leg attack." You never hear of anyone saying, "Well, I had a leg attack." However, it makes just as much sense as saying, "I have had a heart attack." The people with leg attacks can walk only a block or so, and as time goes on they may even lose their limb, and their life.

### II. THE HISTORY AND NATURAL COURSE OF ARTERIOSCLEROSIS OBLITERANS\*

STEPHEN J. HOYE, M.D.

*Assistant Surgeon, Vascular Service, Memorial Hospital, Pawtucket; Assistant Surgeon, Miriam and Our Lady of Fatima hospitals, Providence; Instructor in Surgery, Harvard Medical School*

Arteriosclerosis is a term which has been used to include several different types of degenerative arteriopathy which have different anatomic features and probably different causes. The two main types now recognized are: 1. Medial Arteriosclerosis: which is characterized by fibrosis, areas of focal necrosis, calcareous deposits, and sometimes ossifi-

cation in the medial coat; and 2. Atherosclerosis: which is identified by the presence of yellowish plaque-like deposits in the intima which contain cholesterol, lipoid material, and lipophages.

Virchow first noted the fatty character of the material in the atheromatous lesions and felt that the causation was due to imbibition of fatty substances from the blood stream. However, later he adopted the mechanical theory of origin and considered that they developed as a result of mechanical irritation of the intima at certain points with secondary fatty degeneration and later impregnation with calcium salts. Since that time, the clinical and experimental investigations have developed along these two lines: 1. the disturbances in lipoid metab-

\*From the Surgical Services of the Miriam Hospital, Providence, Rhode Island, and the Memorial Hospital, Pawtucket, Rhode Island.

*continued on next page*

olism with resultant arteriosclerosis; and 2, the localization and predilection of these pathological changes for certain areas of the body giving rise to the clinical syndromes of cerebral, coronary, and peripheral manifestations that we commonly associate with the term *Arteriosclerosis*.

That it existed in ancient times has been demonstrated by the findings of extensive arteriosclerotic lesions in Egyptian mummies. However, the first recorded descriptions of lesions which were undoubtedly arteriosclerotic were made in the sixteenth century by pathologists. In the latter part of the seventeenth century, Cowper noted that in thickened calcareous arteries, the passage of blood was impeded, and Harvey emphasized the difficulty of transmission of pulse in such arteries. Morgagni described the lesions of arteriosclerosis in considerable detail but the term *arteriosclerosis* was apparently originated by Lobstein in the early nineteenth century. The term *atherosclerosis* was originated much later by Marchand in 1904.

Arteriosclerosis obliterans is that combination of atherosclerosis and medial arteriosclerosis which occurs in the abdominal aorta and large and medium-sized arteries of the extremities, eventuating in occlusion of the arterial lumina. The relationship of arteriosclerosis to peripheral gangrene was first recognized by Jean Cruveilhier of Paris in 1829, and his two-volume atlas had several magnificent plates illustrating arterial clots at the site of sclerotic lesions in the lower leg vessels with distal gangrene (Figure 1). Typical sites of involvement by arteriosclerosis obliterans<sup>1</sup> are the distal third of the femoral arteries (Figure 2), the iliac arteries, and the distal part of the abdominal aorta. Compared to the lower extremities, involvement of the upper extremities is uncommon.

Because of this predilection and localization of

the pathological process, the art of peripheral vascular surgery has significantly altered the course and prognosis of the clinical manifestations of pain and peripheral gangrene resulting from arteriosclerosis obliterans. Many direct arterial operations are being performed currently for atherosclerotic occlusive disease of the arterial system leading to the lower extremities. However, the consideration of an arterial operation for such a chronic and relatively generalized condition calls for criteria by which indications for or against this method of treatment may be properly judged. The natural history of the disease must necessarily be known in evaluating the efficacy of, and indications for, direct arterial surgery. What is the prognosis in relation to duration of life and loss of limb, with or without surgery? What is the relationship of diabetes and other environmental influences on the prognosis? Once established, what are the chances for the progression of the process of arteriosclerosis obliterans? Several studies<sup>2,3,4</sup> have evolved during the past few years in an attempt to answer these questions. Previous to this past decade, the absence of any applicable surgical techniques had made such an evaluation unnecessary, but currently some yardstick is necessary.



INTIMAL THICKENING

FIGURE 2

The frequency of occurrence of arteriosclerotic lesions is indicated by the depth of the black lines. (After Martin.<sup>1</sup> Reproduced by permission of the journal.)



FIGURE 1

First recorded illustration of arteriosclerosis obliterans and peripheral gangrene. (After Cruveilhier, 1829.)

#### *Prognosis in Relation to Life*

Juergens et al.<sup>5</sup> reported 520 patients followed for ten years after the diagnosis of arteriosclerosis obliterans was made. The survival rates are shown in Figure 3 compared with those of a general population of the same age and sex distribution. The poorer survival rates for those patients whose proximal point of occlusion was in the aorto-iliac vessels is contrasted with those whose proximal point of occlusion was in the femoral artery. The cause of

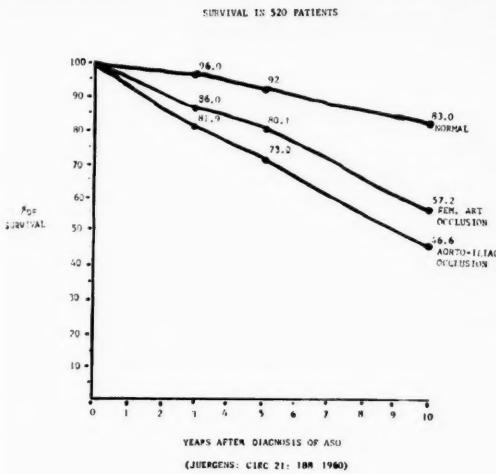


FIGURE 3

**Prognosis in relation to life in all patients.** (After Juergens.<sup>5</sup> Reproduced with permission of the author and journal.)

death could not be accurately determined in all those who died, but in three quarters of them sufficient evidence was available to deduce that death was due to arteriosclerosis of the coronary arteries.

Further limiting the presenting symptomatology, Boyd<sup>6</sup> (Figure 4) followed for ten years a group of 1,440 patients with a presenting symptom of intermittent claudication. The chance of survival for five years for all patients was 73.5 per cent, but this chance was almost halved for ten years (36.8 per cent) and almost halved again for fifteen years (22.0 per cent). On further analysis, the younger age groups showed good survival whereas the gaps widen as the initial age rises and as length of follow-up increases.

Not only the follow-up survival rate but also the rate of morbidity indicate the diffuseness of this disease. Rob and Singer<sup>7</sup> (Figure 5) followed a

group of 322 patients for a mean of three years after their appearance at a peripheral vascular clinic with signs and symptoms of lower extremity arteriosclerosis. In the femoro-popliteal group, 51 patients had evidence of previous ischemic heart disease. During the follow-up period, 51 more had episodes of cardiac ischemia with 25 fatalities, thus making up a major portion of the 19 per cent mortality of the whole group. Cerebral arteriosclerosis had previously been manifest in six of 12 patients with current cerebrovascular accidents of which six were fatal. In the aorto-iliac group, there were 20 previous and 20 current episodes of cardiac ischemia, 14 fatal, again making up a major portion of the 32 per cent mortality. Cerebrovascular accidents occurred in four patients, all fatal. Thus, the diffuseness of the disease is adequately attested to.

#### Prognosis in Relation to Limb

In assessing the risk of loss of limb, Boyd's series of 1,440 patients (Figure 6) included 105 patients with gangrene requiring major amputations. The chance of amputation in the survivors was 7.2 per cent in the first five years and 12.2 per cent in the first ten years. This is slightly greater in the 35-44 age group (15.3 per cent) and in the 75 plus age group this incidence is approximately doubled (31.9 per cent).

#### Progression of Disease

However, the most important question that one has to answer upon seeing a patient with intermittent claudication is the rapidity with which the disease is progressing. Periods of exacerbation will often be followed by periods of remission, which is due to increased collateral circulation. The many cases without progression or with only moderate progression show that the increase in collateral circulation may keep pace with the reduction of lumen of the main arteries. In such cases, the symptoms may remain unchanged for years and the disease may be clinically stationary. Sooner or later, however,

continued on next page

SURVIVAL IN 1440 PTS. WITH CLAUDICATION			MORBIDITY WITHIN THREE YEARS		
AGE	TO 5 YRS.		TO 10 YRS.		TO 15 YRS.
	%	%	%	%	
35-44	96.8	79.8	-	-	-
45-54	90.5	51.7	29	-	-
55-64	72.5	43	29	-	-
65-74	66.2	34	14.8	-	-
75+	49	17	-	-	-
ALL PTS.	73.5%	36.8%	22.0%	-	-

(Boyd, Angiology 11 : 10 1960)

FIGURES 4 and 5

**Figure 4 (Left).** Prognosis in relation to life in patients presenting with claudication. (After Boyd.<sup>6</sup> Reproduced with permission of the journal.)

**Figure 5 (Right).** Mortality and morbidity in arteriosclerosis obliterans. (After Rob.<sup>7</sup> Reproduced with permission of the author.)

MAJOR AMPUTATION IN 1440 PTS.			PROGRESSION AND INITIAL SYMPTOM		
FROM ONSET OF INTERMITTENT CLAUDICATION			INITIAL SYMPTOM		
AGE	IN 5 YEARS	IN 10 YEARS	INITIAL SYMPTOM	TOTAL	PROGRESSION
35-44	5.5%	15.3%	INTER. CLAUD.	270	131 (56%)
45-54	5.2%	6.8%	ICG. + CLAUD.	39	22 (56%)
55-64	7.5%	10.9%	REST PAIN	26	0 (0%)
65-74	12%	19.4%	GUNGER-GANG.	15	10 (67%)
75+	14.6%	31.9%	ACUTE ISCH.	9	9 (100%)
ALL PTS.	7.2%	12.2%	MISC.	4	2 (50%)
			TOTAL	363	196 (54%)

(Rob, BMJ Aug. 27, 1960)

FIGURES 6 and 7

**Figure 6 (Left).** Prognosis of the limb in claudication. (After Boyd.<sup>6</sup> Reproduced with permission of the journal.)

**Figure 7 (Right).** Progression of arteriosclerosis obliterans in relation to symptoms. (After Selvaag.<sup>10</sup> Reproduced with permission of the journal.)

ever, most cases show progression. But how often the progression occurs in the first few years after the onset of symptoms is difficult to say. Careful studies reported in the literature indicate progression rates varying from 25 per cent in a recent report from the Mayo Clinic<sup>8</sup> to 75 per cent recently quoted from the Cleveland Clinic.<sup>9</sup> Probably the true incidence lies somewhere between these. This is borne out by an excellent study from Norway by Selvaag<sup>10</sup> (Figure 7). He and his co-workers followed 363 patients over six years and assessed their incidence of progression prior to and while under observation. They found an over-all incidence of progression in 196 cases, or 54 per cent of the group. Interestingly, the incidence of progression is the same (56 per cent) in cases which began with uncomplicated claudication as in cases which started with coldness, with or without claudication, or color changes. When pain at rest or the picture of acute insufficiency was observed initially, progression was less frequent, thus reflecting the tendency to spontaneous improvement.

As shown by Selvaag (Figure 7), arteriography disclosed complete occlusion of one or more arteries in 84 per cent of cases. Forty to 50 per cent of those with occlusions had more than one occlusion in the same extremity, grouped according to the most proximal occlusion. There seemed to be no distinct difference in the incidence of progression between proximal and distal occlusions. The over-all incidence of progression was 58 per cent. The incidence of amputation seemed to be lower for occlusions in or proximal to the femoral artery (10 per cent) than for occlusions below this level (25 per cent).

#### ARTERIOGRAPHIC LEVEL OF OCCLUSION (363 PTS.)

LEVEL	TOTAL	PROGRESSION	AMPUTATION	DEATHS
AORTO-ILIAC	34	24 (70%)	4 (12%)	10 (29%)
SUP. FEMORAL	220	120 (55%)	22 (10%)	41 (19%)
DEEP FEM.+	9	7 (78%)	1 (11%)	4 (44%)
POPLITEAL	25	15 (60%)	7 (28%)	5 (20%)
LEG ART.	18	11 (61%)	4 (22%)	7 (39%)
NO OCCLUS.	57	19 (33%)	1 (2%)	8 (14%)

(Selvaag : Acta Chir. Scand. Suppl. 253 : 1960)

FIGURE 8

Progression in relation to arteriographic localization of disease. (After Selvaag.<sup>10</sup> Reproduced with permission of the journal.)

The arteriographic evidence of progression is quite striking when seen in arteriograms (Figure 9) taken serially for research purposes in patients presenting with intermittent claudication.<sup>11</sup> This compilation of arteriograms shows progression of disease with and without surgical intervention. They are all taken from actual arteriograms but pictured diagrammatically for ease in presentation. In A is

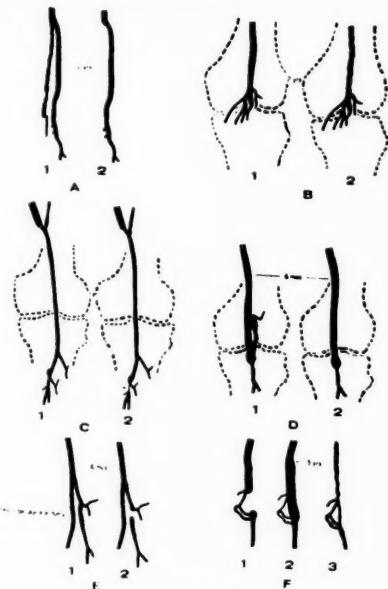


FIGURE 9  
Progression of arteriosclerosis obliterans with and without surgery. (After Warren.<sup>11</sup> Reproduced with permission of the author.)

visualized a badly diseased superficial femoral artery, and in an arteriogram two years later, further closure with no increase in symptoms or signs in the intervening years. In B, a total block of the lower popliteal artery with collateral circulation can be seen, and two years later, roughening of the walls is apparent but with no further symptoms. In the remaining cases, progression of disease is demonstrated after arterial reconstruction. In C, the first arteriogram is two years after the placement of a by-pass graft. One year later, severe stricture has developed in the posterior tibial artery with continued patency of the graft after three years of function. In D, the first arteriogram is two years after a by-pass graft; six months later, the segment of the popliteal artery above the anastomosis is gone. The graft closed three years after initial operation, or six months after this arteriogram, with subsequent amputation. In E, the first arteriogram is two and a half years after thromboendarterectomy of the superficial femoral artery, showing an intact deep femoral artery segment. Six months later, occlusion of a segment of the deep femoral artery can be seen with no increase in symptoms. In F, there is a striking example of what happens to collaterals. The first arteriogram is preoperative, showing a block of the superficial femoral artery in the adductor canal. Three months after thromboendarterectomy, marked shrinkage of the collaterals can be seen. Three years after operation, re-enlargement of the collaterals is seen as stenosis recurs.

Thus we can see that progression occurs with or without surgery. However, in addition to this, we all know that progression of symptoms may take place without any demonstrable changes in the arteriograms.

The factors that affect progression are many and varied. Some we can influence; others we cannot control at the present time:

1. *Age.* As illustrated, the incidence of progression and of amputations was significantly higher at ages past 70 years. Undoubtedly, this is related to the reduced possibility of collateral development and less vital tissue in the aged.
2. *Diabetes.* There is a definitely higher incidence of progression and amputations in the diabetic and at an earlier age, although this does not seem to be related in a linear fashion to control of diabetes.
3. *Sex.* Although the number of men with arteriosclerosis obliterans outnumbers the women anywhere from 6 : 1 to 11 : 1, sex *per se* did not seem to influence progression.
4. *Smoking.* There is no clean-cut association, although there seem to be some beneficial results in individual cases by reduction or abstinence.
5. *Occupation.* No difference is demonstrable (heavy labor *vs.* sedentary).
6. *Plasma Cholesterol.* There is a slight tendency for it to be higher in patients with arteriosclerosis obliterans, but there is too much overlap for it to be significant in the individual case.
7. *Obesity.* In middle-aged, non-diabetic patients, obesity is not commonly associated with arteriosclerosis obliterans and is probably not significant in pathogenesis.
8. *Hypertension.* It is present in only 25 per cent. It is probably not a frequent accelerating factor in the disease process.

#### *Conclusions*

1. The natural history of arteriosclerosis obliterans is important in assessing the advisability of and beneficial effects of direct arterial surgery.
2. The diffuseness of the disease process is evidenced in the significant over-all mortality and morbidity, which are primarily attributable to cerebral and coronary arteriosclerosis.
3. The disease process in the extremities seems to be progressive in approximately 54 per cent of the cases; the incidence of amputation is about 12 per cent in patients presenting with symptoms of intermittent claudication.

4. Of the various factors affecting the progression of arteriosclerosis obliterans, diabetes and age are the most closely correlated; hence *when either of these factors is operative*, active surgical intervention should be considered earlier in the course of the disease process.

#### REFERENCES

- 1 Martin, P.: Pathological Anatomy of Atherosclerosis and Its Relation to Peripheral Artery Grafting. *Angiology* 9:349, 1958
- 2 Silbert, S., and Zazeela, H.: Prognosis in Arteriosclerotic Peripheral Vascular Disease. *J.A.M.A.* 166:1816, 1958
- 3 LeFevre, F. A.; Corbacioglu, C.; Humphries, A. W., and deWolfe, V. G.: Management of Arteriosclerosis Obliterans of the Extremities. *J.A.M.A.* 170:656, 1959
- 4 Richards, R. L.: Prognosis in Intermittent Claudication. *Brit. M. J.* 2:1091, 1957
- 5 Juergens, J. L.; Barker, N. W., and Hines, E. A.: Arteriosclerosis Obliterans: Review of 520 Cases with Special Reference to Pathogenic and Prognostic Factors. *Circulation* 21:188, 1960
- 6 Boyd, A. M.: The Natural Course of Arteriosclerosis of the Lower Extremities. *Angiology* 11:10, 1960
- 7 Singer, A., and Rob, C.: The Fate of the Claudicator. *Brit. M. J.* 2:633, 1960
- 8 Schadt, D. C.; Hines, E. A.; Juergens, J. L., and Barker, N. W.: Chronic Atherosclerotic Occlusion of the Femoral Artery. *J.A.M.A.* 175:937, 1961
- 9 Humphries, A. W.: Personal communication
- 10 Selvaag, O., and Bjornstad, P.: Progressive Tendency of Arteriosclerosis Obliterans of the Lower Extremities. *Acta Chir. Scand. Supp.* 253:187, 1960
- 11 Warren, R.; John, H. T.; Shepherd, R. C., and Villavicencio, J. L.: Studies on Patients with Arteriosclerotic Obliterative Disease of the Femoral Artery. *Surgery* 49:1, 1961
- 12 Cowdry, E. V.: Arteriosclerosis—A Survey of the Problem. New York, The MacMillan Company, 1933

*continued on next page*

#### CHILD PSYCHIATRY SCHOLARSHIP

A child psychiatry Fellowship is available immediately. American Board and AAPCC approved for two-year child psychiatry training. Also Board approved for third-year residency. Supervised training in psychoanalytically oriented therapy with children and their parents. Group psychotherapy, mental health education, inter-agency and school conferences and consultations are integral parts of the training program. Fellow will attend seminars of Harvard training program in child psychiatry. Two-year Fellowship offered to candidate who has completed a minimum of two years of approved psychiatry residency. Must be a United States citizen or permanent resident. Foreign graduates must be ECFMG certified or Rhode Island licensed. Write: HECTOR JASO, M.D., Director, Providence Child Guidance Clinic, 333 Grotto Avenue, Providence 6, Rhode Island.

#### *Sesquicentennial Celebration Dates*

#### SCIENTIFIC MEETING

May 8 and 9, 1962

Marvel Gymnasium, Brown University

### III. THE DIAGNOSIS OF PERIPHERAL ARTERIAL OCCLUSIVE DISEASE\*

WILLIAM P. CORVESE, M.D.

*Assistant Surgeon, Department of Surgery,  
Rhode Island Hospital*

Advances in vascular surgery emphasize the need for precise diagnosis in peripheral arterial disease. The problem is no longer one of academic interest since effective techniques are now available for restoring blood flow to the extremities and other body regions. Successful employment of these techniques requires the thorough assessment of vascular impairment and the careful selection of patients if success is to be assured. The relief of incapacitating symptoms and prevention of major amputations are goals worthy of some diagnostic effort, particularly when these efforts involve simple clinical procedures. It is my purpose briefly to review some of the more salient diagnostic features of peripheral arterial insufficiency, including the laboratory procedures employed in the evaluation of the arterial circulation.

#### Acute Arterial Occlusion

The sudden interruption of blood flow to an extremity is usually manifested by acute pain. Numbness and loss of motor power rapidly follow. The limb becomes pale, cool, and flaccid. If arterial continuity is not re-established, the end result may be gangrene. The diagnosis of acute arterial occlusion in its classic form is familiar to most physicians. Occasionally, the symptoms may develop gradually and the true nature of the occlusion not suspected. Frequently, patients with this clinical picture will have a history of cardiac disease—either auricular fibrillation secondary to rheumatic valvulitis or a recent myocardial infarction. In most instances, acute occlusion is the result of embolism. A similar picture may follow acute thrombotic occlusion occurring in a vessel already narrowed by arteriosclerosis. Formerly, it was considered important to distinguish between these two conditions since the treatment of each differed. However, with available modern techniques, prompt operation is frequently effective in both types of occlusions. The location of the arterial block can be determined from the patient's complaints and by careful palpation of the peripheral pulses. Occlusion of the terminal aorta or iliac arteries results in pain in the lower abdomen, back, buttocks, hips, and thighs. When occlusion is complete, there is absence of all pulses in the lower extremities. The aortic pulse, proximal to the occlusion, may be accentuated. Both limbs

appear cadaveric and cool to the level of the mid-thigh and are paralyzed.

When occlusion occurs in the femoral artery, the ensuing symptoms are similar but are referable to the leg below the knee. Similarly, occlusion at the femoro-popliteal level produces ischemic manifestations in the distal third of the leg. Some authors have suggested the use of arteriography to delineate precisely the site of acute arterial occlusions. In my experience, this has not been necessary. However, arteriography may be of value in planning a reconstructive procedure in acute thrombotic occlusions by demonstrating a patent popliteal outflow tract.

#### Chronic Arterial Occlusion

The presenting complaint of nearly all patients with chronic arterial disease is pain. Its distribution is identical to that seen in the acute form, but the intensity of the symptoms vary, depending upon the status of the collateral circulation (Figure 1.) In most instances, patients with chronic occlusions are free of pain at rest. Characteristically, pain occurs only with exercise and is promptly relieved with rest—the so-called intermittent claudication. The ease with which symptoms are precipitated is an indication of the degree of vascular impairment. The patient may also complain of coldness in the extremity. Sensory changes appear late in the course of the disease. Muscle atrophy and other

#### RELATION OF SITE OF OCCLUSION TO PAIN DISTRIBUTION AND PULSE CHANGES

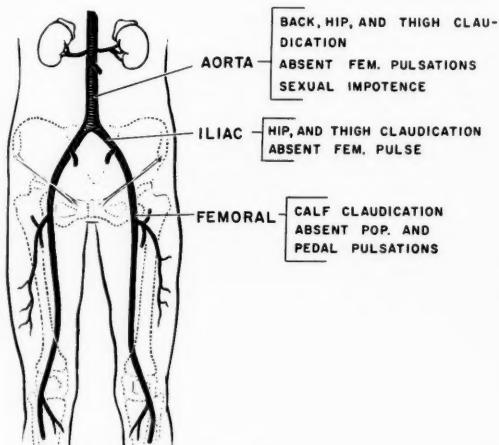


FIGURE 1

Relation of site of occlusion to pain distribution and pulse changes.

\*From the Surgical Service, Division of Cardiovascular Surgery, Rhode Island Hospital, Providence, R. I.

trophic changes similarly develop only after the collateral bed has been severely compromised.

Palpation of the peripheral pulses is the most important part of the examination in patients suspected of having chronic arterial insufficiency. The involved extremity may also feel cooler than the one with normal circulation. Auscultation over the affected blood vessel will often reveal a systolic bruit which is an indication of incomplete obstruction. The degree of vascular insufficiency may be further substantiated by evaluating the postural color changes. Elevation of an ischemic extremity will result in pallor and dependency in rubor. Observation of the venous filling time and the time for return of capillary pulse is frequently helpful.

#### Differential Diagnosis

The symptoms of peripheral arterial insufficiency are frequently confused with those of a variety of neurological and musculoskeletal disorders of the lower extremities. Obstruction of the terminal aorta and complete or incomplete obstructions of the iliac arteries are the lesions most likely to give rise to these confusing patterns, if the true nature of the underlying pathology is not appreciated. Symptoms may be attributed to nerve root compression (intervertebral disk protrusion) and other low back disorders. However, if care is taken to include palpation of the peripheral pulses, such diagnostic errors will rarely occur and the vascular lesion will not be overlooked. Gilfillan, Jones, Roland and Wylie were among the first to call attention to this problem. Acute ileofemoral thrombophlebitis should rarely cause difficulty because of the rapid onset of swelling which is one of the dominant features of this condition.

#### Arteriography

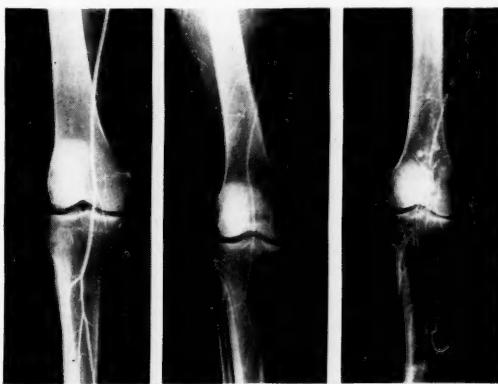
The most important diagnostic procedure and the final determinant of operability in occlusive arterial disease is arteriography. This is a relatively simple diagnostic procedure which can be performed under local anesthesia without elaborate equipment. The intra-arterial injection of a radio-opaque material with properly timed roentgenograms clearly defines the location of the obstructing lesion and its extent. Further, the patency of the vascular bed beyond the occlusion ("the run-off") can be determined. If patients are to be properly selected for restorative surgery and the appropriate procedure employed, it is essential to determine the adequacy of "the run-off." While direct arterial surgery is applicable to segmental occlusions, it is of little or no value in the treatment of diffuse arteriosclerotic involvement of the extremity. Recently, I have employed the technique of roentgencinematography continuously to record on 35mm. motion picture film the course of the injected radio-opaque substance through the arterial tree. This method, by virtue of

its continuous recording, eliminates the error of timing in exposure of single X-ray films and also provides a dynamic picture of the pathological arterial changes. The femoro-popliteal level may be studied by the percutaneous injection of the dye in the common femoral artery. Aortography is used in the investigation of the aorto-iliac segments and is accomplished by one of several methods—translumbar aortography, retrograde aortography via the femoral artery, and by the recently introduced technique of intravenous aortography. Figure 2 is that of a normal femoral arteriogram. Figure 3 illustrates a segmental block with an adequate or good "run-off" (a lesion suitable for a reconstructive operation). Figure 4 shows an obstructing lesion with an inadequate or poor "run-off" (this lesion is not amenable to direct arterial surgery).

#### Other Diagnostic Adjuncts

A number of other techniques, among them oscilometry, skin temperature determinations, sweating tests, digital plethysmography and blood flow studies, walking tests, ergometry, and diagnostic sympathetic blocks, have been employed in the diagnosis of obliterative arterial disease. Some of these are of importance in selecting patients likely to benefit from lumbar sympathectomy. However, experience has shown that these methods of investigation are of little value and not essential in selecting patients for definitive arterial surgery. The measurement of tissue clearance of radioactive isotopes is another mode of measuring blood flow but finds its use confined to physiologic studies. The determination of the tissue oxygen tension by means of a platinum electrode is also a tool chiefly for laboratory use.

*continued on next page*



FIGURES 2, 3 and 4

Figure 2. Normal femoral arteriogram demonstrating normal popliteal outflow.

Figure 3. A high femoral block with a normal or adequate outflow tree.

Figure 4. Femoral popliteal occlusion with inadequate run-off.

## SUMMARY

The diagnosis of peripheral arterial occlusive disease is readily made with a high degree of accuracy on the basis of clinical symptoms and objective findings. Acute and chronic arterial obstructions are amenable to reconstructive surgery. Peripheral arteriography will clearly delineate the extent of the obliterative process and provide the necessary information for selecting the appropriate treatment. Other diagnostic procedures have their greatest usefulness in selecting candidates for lumbar sympathectomy. The importance of differentiating symptoms of vascular origin of the lower extremities from other entities is stressed.

## REFERENCES

<sup>1</sup>Allen, E. V.; Barker, N. W., and Hines, E. A., Jr.:

Peripheral Vascular Diseases. 2nd Ed., W. B. Saunders Co., Phil., 1955

<sup>2</sup>Cranley, J. J., Jr.; Buchanan, J. L.; Simeone, F. A., and Linton, R. R.: A Critique of Laboratory Methods in Peripheral Vascular Disease. *Surgery* 31:74, 1952

<sup>3</sup>Crawford, E. S.; DeBakey, M. E., and Cooley, D. A.: Current Concepts in the Management of Arteriosclerotic Occlusive Disease Based on Treatment of More than Seven Hundred and Fifty Patients by Direct Approach. *West. J. Surg.* 67:25, 1959

<sup>4</sup>Gilliland, R. S.; Jones, O. W., Jr.; Roland, S. I., and Wylie, E. J.: Arterial Occlusions Simulating Neurological Disorders of the Lower Limbs. *J.A.M.A.* 154:1149, 1954

<sup>5</sup>Hardy, J. D.: Surgery of the Aorta and Its Branches (Part I). *Am. Pract. and Digest Treat.* 2:3, 1960

<sup>6</sup>Linton, R. R.: Peripheral Vascular Diseases. *New England J. Med.* 260:272, 1959

<sup>7</sup>Vargas, L. L., and Corvese, W. P.: Leriche's Syndrome. *Rhode Island M. J.* 43:305, 1960

## IV. ACUTE ARTERIAL OCCLUSIONS\*

SEEBERT J. GOLDOWSKY, M.D.

*Surgeon-in-Chief, Miriam Hospital, Providence;  
Director, Peripheral Vascular Clinic,  
Rhode Island Hospital, Providence*

Acute interruption of the arterial circulation of the extremities or of the bowel constitutes a surgical emergency. For the purposes of this discussion, three types of acute vascular accident will be considered: traumatic, thrombotic, and embolic.

Arterial trauma resulting in major disturbance to the circulation of an extremity may cause severe spasm, acute contusion with thrombosis, laceration, or actual severance. Severe ischemia with blanching or cyanosis, coldness, anesthesia, or inability to move the toes is an indication for early exploration of the vessels. Profuse bleeding from a wound or a pulsating hematoma signifies laceration or severance of a major vessel. Exploration of vessels has come to be a well-standardized procedure, and since it is not very disturbing to the patient, should be done where any doubt of viability exists. Orthopedic and fracture surgeons should be mindful of vessel injury in cases of fracture or dislocation, compound or closed, and should be ready to seek help from a vascular surgeon when a question of vascular injury exists. Undoubtedly many fractured extremities have been lost in the past that might have been saved by combining early arterial surgery with appropriate treatment of the fracture. Several methods are available for management of the local pathological process. Simple closure is sufficient for clean lacerations, while end-to-end suture may suffice for completely severed vessels. Excision and primary closure may be used for repair of badly

lacerated, contused, or thrombosed vessels where the involvement is of limited extent. For longer segments, replacement by autogenous vein graft or synthetic prosthesis of dacron or teflon will be required. For this specific purpose autogenous vein grafts have often been favored, but either type of replacement will provide a satisfactory result. Where severe spasm alone is found, local application to the vessel of procaine or papaverine solution may be effective. Emergency arteriography is a useful diagnostic procedure in acute arterial lesions, and can provide an accurate pre-operative diagnosis in difficult cases; or it may even obviate the need for surgery. The demonstration of an accessible block or extravasation of opaque material will provide the necessary impetus for surgery in doubtful cases.

Acute arterial thrombosis due to atherosclerosis occupies an intermediate zone between chronic arteriosclerosis obliterans to which it is related pathologically, and acute arterial embolism to which it is related clinically. The clinical differentiation of thrombosis and embolism may be extremely difficult. The absence of those manifestations of systemic disease, which usually accompany embolism, will suggest thrombosis, but a definitive and final determination often cannot be made on clinical grounds alone. For example, in a series of forty-two patients manifesting verified arterial embolism, previously reported by Goldowsky and Bowen,<sup>1</sup> no source or origin for the emboli could be found on clinical evaluation in seven, and in five of these cases none could be found even at post-mortem examination. In fact, arteriography, which is very useful in the clinical evaluation of chronic thrombotic lesions, may not itself give a fully accurate answer (Figure 1). The approach as regards urgent sur-

\*From the Surgical Service of the Miriam Hospital, and the Surgical Service and Peripheral Vascular Clinic of Rhode Island Hospital.



FIGURE 1

**Embolus or Thrombus?** Femoral arteriogram showing acute occlusion in a sixty-eight-year-old dentist who had been well previously. A block with an actual filling defect in a normal appearing vessel can be seen suggestive of an embolus. The absence of collateral circulation is characteristic of acute occlusions. Actually, this proved to be a thrombus, propagating proximally from an atherosomatous occlusion of the distal popliteal artery. The new thrombus was removed, but the distal lesion was not amenable to surgery. Sympathectomy was performed with eventual survival of the extremity.

ger may be somewhat more conservative in thrombosis than in embolism when the diagnosis is reasonably clear, but when viability is seriously impaired or in doubt, surgery should not be delayed. The technical procedures available are thrombectomy, thromboendarterectomy, and by-pass grafting with a plastic prosthesis.

The diagnosis of acute peripheral arterial embolic occlusion rests on the concurrence of certain acute and chronic, or generalized and local, symptoms and signs. The acute episode is characterized by the occurrence of pain, coldness, pallor, numbness, and inability to move the toes. When these occur in a patient with rheumatic or arteriosclerotic heart disease, mitral stenosis, auricular fibrillation, congestive failure, or recent coronary occlusion giving rise to a mural thrombus, the diagnosis of embolism is highly probable. The presence of cardiac disease, however, does not confirm the presence of embolism,

nor, as previously pointed out, does its absence exclude this possibility. For example, atherosomatous plaques in the aorta, particularly when overlaid with thrombus, may give rise to distal emboli, as may also aneurysms which, characteristically, contain laminated thrombus. The diagnosis of embolism can usually be made on clinical grounds, but occasionally a femoral arteriogram, even on the operating table, may be helpful.

As soon as the diagnosis is apparent, embolectomy should be performed. Although early intervention is desirable, operation need not be precluded by even a prolonged delay in diagnosis. This principle, now generally accepted, was further confirmed in our previously mentioned study. Improved techniques, such as multiple arteriotomies and wash-through or retrograde flushing procedures, render surgery effective even after a delay of hours, and in some cases days. Permanent anticoagulation should be instituted in the post-operative period when there are not contraindications. Our experience with long-term anticoagulation has been very favorable.

In embolism of the upper extremity, where formerly a conservative approach was recommended, the indications for surgery are now essentially the same as for the lower extremity.

With the demonstration of the feasibility of the surgical management of acute mesenteric occlusions, this area has recently been receiving much attention. Under the impetus of Doctor Robert S. Shaw,<sup>2</sup> superior mesenteric embolectomy and thrombectomy have been attempted with increasing frequency. Success at this site has thus far been very limited, but increasing awareness of the possibility of surgical intervention should lead to more encouraging results. Internal carotid embolectomy has also been carried out successfully,<sup>3</sup> and should always be considered in appropriate cases.

#### REFERENCES

- Goldowsky, Seebert J., and Bowen, J. Robert: Arterial Embolectomy. *J.A.M.A.* 172:799, 1960
- Shaw, Robert S.: Superior Mesenteric Artery Embolectomy in Treatment of Massive Mesenteric Infarction. *New England J. Med.* 257:595, 1957
- Kleavland, Richard: Internal-Carotid-Artery Embolectomy. *New England J. Med.* 264:759, 1961

*continued on next page*

#### MAIL EARLY IN THE DAY

All members of the Society are urged to give full co-operation to the Providence postal authorities in their effort to give impetus to the nationwide improved mail service program. The deposit of all mail late in the afternoon and evening hours creates an avalanche that taxes the manpower facilities of the post office department here.

Physicians can help the program by presenting volume mail in the morning hours whenever possible. Your co-operation is expected.

## V. SURGICAL TREATMENT OF CHRONIC ARTERIAL OCCLUSIVE DISEASE\*

LESTER L. VARGAS, M.D.

*Surgeon-in-Chief, Rhode Island Hospital;  
Director, Cardiovascular Research Laboratory,  
Rhode Island Hospital; Assistant Clinical  
Professor of Surgery, Tufts University  
School of Medicine, Boston, Massachusetts*

The surgical objective in treating chronic arterial occlusive disease is to increase blood supply to the affected part in an effort to relieve symptoms and conserve tissue. This can be accomplished by directly removing the obstructing process or by circumventing the diseased segment of the artery with a suitable graft. Indirectly, the collateral blood flow to a region can be improved by sympathetic ganglionectomy. The choice of the surgical procedure employed in chronic arterial occlusive disease of the lower extremities will depend upon the location of the obstruction, its extent, and the condition of blood vessels distal to the occlusion—the so-called "run-off." Other factors such as the severity of symptoms, threatened viability of the limb, and the general condition of the patient also play an important role in selecting suitable candidates for surgical treatment. These features have been reviewed by other authors elsewhere in this issue and will not be discussed in this presentation. I propose to describe the modern vascular surgical techniques currently employed for the relief of chronic ischemia of the lower extremities.

### *Endarterectomy*

In 1947, Dos Santos<sup>1</sup> demonstrated that endarterectomy was an effective method of restoring vascular continuity in occluded arteries. In this technique, the pathological intima and intraluminal thrombotic material is separated from the host vessel by dissection in a plane between the intima and media and is removed as a solid core (Figure 1). At first, a long arteriotomy was employed but the design of a variety of internal stripping instruments now makes it possible to carry out the procedure through several short arteriotomies (Figure 2). Recently, the technique has been further refined to include the application of an onlay or patch graft of fresh autogenous vein at the arteriotomy site to ensure that the artery will not be narrowed by the repair. Where the disease has resulted in long-narrowed arterial segments, strips of fresh saphenous vein can be used to restore normal arterial caliber (Figure 3).

Wylie and his associates<sup>3</sup> have described the changes occurring in the artery following the surgi-

\*From the Surgical Service, Division of Cardiovascular Surgery, Rhode Island Hospital, Providence, R. I.

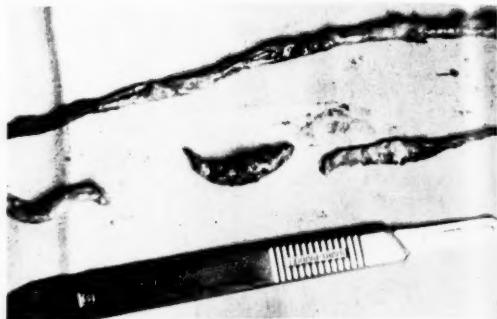


FIGURE 1

Core of atheromatous material removed at operation from the superficial femoral artery.

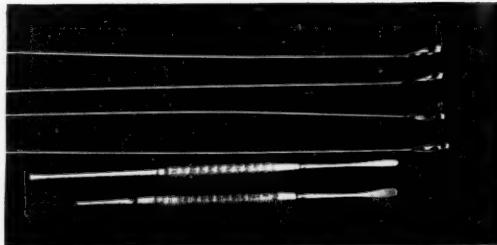


FIGURE 2

Various instruments employed in performing thrombo-endarterectomy.

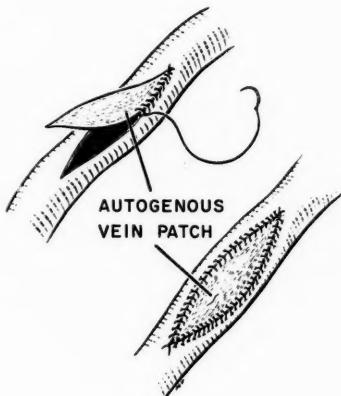
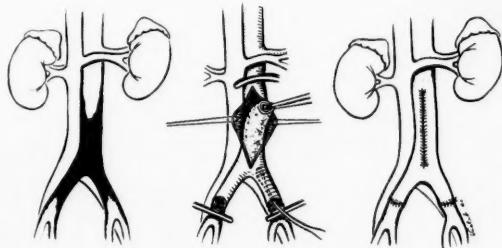


FIGURE 3  
Drawing of patch graft.

cal removal of its intima and occluding atheroma. A fibrinous clot immediately replaces the excised intima and is confined to the periphery of the artery by the high velocity blood flow. Fibroblasts from the adjacent media then invade the lining fibrinous matrix and become modified. By the fifth week these cells are indistinguishable from those of normal intima.

Successful utilization of this method depends upon meticulous attention to details of vascular surgical technique. Experience has shown that this method is best suited to cases in which the occlusion is well localized in relatively large vessels. It is widely employed in the surgical treatment of chronic arteriosclerotic aorto-iliac occlusion<sup>4</sup> (Figure 4). The operation is also suitable in the treatment of short segmental occlusions of the superficial femoral artery.



THROMBO-ENDARTERECTOMY

**FIGURE 4**

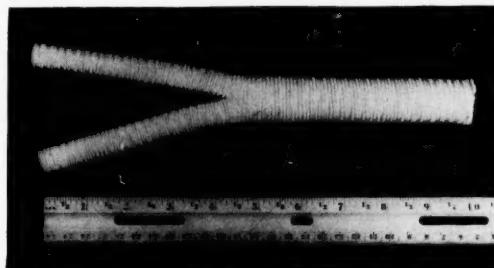
Aorto-iliac endarterectomy.

#### *Resection with Graft*

The concept that an occluded arterial segment could be resected and vascular continuity restored by the interpolation of a suitable blood vessel graft is not new. Carrel<sup>5</sup> and others,<sup>6</sup> at the turn of the century, demonstrated, in experimental animals, the feasibility of utilizing a variety of blood vessel grafts, including some fashioned from synthetic materials. However, it was not until 1948 that a preserved arterial homograft was successfully used clinically by Gross and his associates.<sup>7</sup> Since then, blood vessel grafts have been widely used in treating chronic arterial occlusions.

Preserved arterial homografts, at first, were considered ideal arterial substitutes, particularly for larger vessels, but their long-term use revealed that they underwent degenerative changes resulting in thinning, dilatation, and rupture. For this reason, other materials were studied. Autogenous veins, when used to replace larger arteries within the abdomen or thorax, quickly became aneurysmal but were found to function admirably in the extremities where they received support from surrounding muscles. In 1952, Voorhees, Jaretzki, and Blakemore<sup>8</sup> reported the successful use of a porous fabric

prosthesis woven from Vinyon "N." They demonstrated that the fabric interstices quickly became filled with fibrin which effectively rendered the graft impervious to blood within a few minutes. Subsequent fibroplastic invasion of the clot resulted in the growth of a new blood vessel where the woven fabric served as a scaffold. This significant achievement provided the research stimulus which culminated in the development of commercially available prostheses of dacron and teflon (Figure 5).



**FIGURE 5**  
A commercially-available bifurcation graft of knitted dacron.

Like endarterectomy, the technique of resection with grafting is best suited to larger vessels such as the aorta and iliac arteries (Figure 6). It is also in these larger vessels that woven plastic prostheses function most effectively. In smaller peripheral arteries, the need to interrupt collateral branches and the danger of constriction at the suture line results in a high incidence of failure when end-to-end graft interpolation is employed.



**FIGURE 6**  
A synthetic bifurcation graft after implantation.  
*continued on next page*

**By-pass Graft**

To overcome the disadvantages of arterial excision and to facilitate surgical treatment of long segmental occlusions, Kunlin<sup>9</sup> introduced the method of by-pass grafting. This technique requires an end-to-side anastomosis of a blood vessel graft to a host artery proximal and distal to the occlusion (Figure 7). Extensive dissection of the diseased artery is not necessary and collateral circulation to the limb is preserved. Consequently, failure of the graft is less likely to result in irreversible ischemic damage to the extremity. Another important advantage of this method is that the site of anastomosis on the host artery can be carefully selected to avoid arteriosclerotic plaques. The caliber of the vessel does not limit the size of the anastomosis since the end of the graft can be flared and beveled to produce an opening of larger diameter than the recipient vessel.

Extensive experience with this technique by Linton and Menendez<sup>10</sup> and by Crawford and DeBakey<sup>11</sup> has clearly demonstrated its superiority. While some vascular surgeons continue to employ fabric prostheses for by-passing peripheral vessels, recent experience suggests that autogenous vein grafts, when available, may be superior.

**Lumbar Sympathectomy**

Excision of the lumbar sympathetic ganglionated chain is a time-honored method used to enhance blood supply to the distal lower extremity. By decreasing the resistance to blood flow in the collateral vascular bed, increased circulation to the skin results. In some instances, symptoms of ischemia are relieved following lumbar sympathectomy. Where indications for direct arterial surgery are borderline, it is possible that preliminary or con-

comitant sympathectomy will improve the exit flow. However, it must be recognized that this indirect method of increasing blood flow constitutes a last effort at limb salvage and has no place in the definitive treatment of occlusive arterial disease. It is only after demonstrating by arteriography that direct arterial surgery is not feasible that a surgeon is justified in utilizing this procedure.

**Comment**

The success—or failure—of the methods discussed above in enhancing blood flow to an extremity will depend largely upon the criteria for selecting patients. Where an adequate “exit flow” has been demonstrated by arteriography and a limb is in jeopardy, a direct operation on the occluded vessel is justified. To do nothing is to condemn the extremity to early amputation. The pessimistic reports of some authors,<sup>12</sup> calling attention to reocclusion of grafts from two to four years after implantation, while honest and objective, mean little to the patient who would prefer to walk with his own limb for as long as possible. On the other hand, where tissue viability is unimpaired, the vascular surgeon must exercise judgment and restraint in employing direct arterial surgery to relieve symptoms. Clearly, any procedure that would threaten limb viability is ill-advised. Nonetheless, in many cases, short segmental occlusions producing distressing symptoms in otherwise normal limbs are amenable to treatment by conservative surgical techniques. In the author's personal experience no limb has been lost where a by-pass graft or endarterectomy has been employed to relieve symptoms.

**SUMMARY**

In an extremity compromised by arteriosclerotic arterial occlusion, increased blood flow is essential if viability is to be preserved and symptoms relieved. Endarterectomy, excision with graft, or by-pass grafting will achieve this objective where attention is directed toward careful selection of patients. Demonstration of an adequate “run-off” or “exit-flow” by arteriography is a prerequisite. Lumbar sympathectomy is reserved for patients who cannot benefit from direct arterial surgery.

**REFERENCES**

- <sup>1</sup>Dos Santos, J. C.: Sur les Desobstruction des Thrombooses Artérielle Anciennes. *Mém. Acad. Chir.* 73:409, 1947
- <sup>2</sup>Senning, A.: Strip Graft Technique. *Acta Chir. Scand.* 118:81, 1959
- <sup>3</sup>Wylie, E. J.; Kerr, E., and Davies, O.: Experimental and Clinical Experience with the Use of Fascia Lata Applied as a Graft about Major Arteries after Thromboendarterectomy and Aneurysmorrhaphy. *Surg. Gynec. and Obst.* 93:257, 1951
- <sup>4</sup>Vargas, L. L., and Corvese, W. P.: Lerche's Syndrome: Review of Clinical Features and Surgical Treatment. *R. I. Med. J.* 43:305, 1960

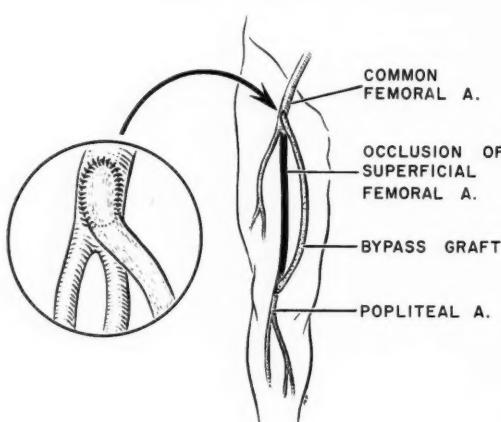


FIGURE 7  
By-pass graft. (Drawing.)

- <sup>5</sup>Carrel, A.: Ultimate Results of Aortic Transplantation. J. Exper. Med. 15:389, 1912
- <sup>6</sup>Guthrie, C. C.: End Results of Arterial Restitution with Devitalized Tissue. J.A.M.A. 73:186, 1919
- <sup>7</sup>Gross, R. E.; Hurwitt, E. S.; Bill, A. H., and Pierce, E. C., 2nd: Preliminary Observations on the Use of Human Arterial Grafts in the Treatment of Certain Cardiovascular Defects. New Eng. J. Med. 239:578, 1948
- <sup>8</sup>Voorhees, A. B., Jr.; Jaretzki, A., III, and Blakemore, A. H.: The Use of Tubes Constructed from Vinyon "N" Cloth in Bridging Arterial Defects. Ann. Surg. 135:332, 1952
- <sup>9</sup>Kunlin, J.: Le Traitement de L'ischemie Artériale par la Greffe Veineuse Longue. Rev. Chir. 70:206, 1951
- <sup>10</sup>Linton, R. R., and Menendez, C. V.: Arterial Homografts: A Comparison of Results with End-to-End and End-to-Side Vascular Anastomoses. Ann. Surg. 142:568, 1955
- <sup>11</sup>Crawford, E. S., and DeBakey, M. E.: The By-Pass Operation in the Treatment of Arteriosclerotic Occlusive Disease of the Lower Extremities. Surg. Gynec. and Obst. 101:529, 1955
- <sup>12</sup>Warren, R.; John, H. T.; Shepard, R. C., and Villavicencio, J. L.: Studies on Patients with Arteriosclerotic Obliterative Disease of the Femoral Artery. Surg. 49:1, 1961

## VI. DISCUSSION

*Doctor Eddy:* The first question is directed to either Doctor Hoye or Doctor Corvese. The question is on the differential diagnosis, between atherosclerosis and thrombo-angiitis—Buerger's Disease—as a cause of arterial obstruction. I think this means: What is the difference between atherosclerotic occlusion and Buerger's Disease?

*Doctor Corvese:* I believe that the differential diagnosis between these diseases is becoming of less importance today to the vascular surgeons. What we formerly termed Buerger's Disease is today being considered in many circles as being a variation of arteriosclerosis obliterans. There perhaps still is a disease occurring in young males which is preceded by migratory phlebitis, and does respond with the elimination of tobacco. But, for practical purposes, I think the treatment is essentially the same.

*Doctor Eddy:* Doctor Hoye, how important is the finding of calcification by X-ray in the arterial wall?

*Doctor Hoye:* I think from the view of prognosis and treatment the finding of calcification in an X-ray *per se* is important only in the sense that this is a particular type of arteriosclerosis, commonly called medial arteriosclerosis, and is an indication of arteriosclerosis alone, and it has no effect on either prognosis or treatment. However, a by-pass graft or a thrombo-endarterectomy, in the presence of calcification seen by X-ray may sometimes be difficult, if not impossible, because of the depth of the process.

*Doctor Eddy:* Doctor Goldowsky, can you give us more detail about anticoagulant therapy associated with the removal of emboli?

*Dr. Goldowsky:* I presume the question has reference to the indications for the method of administering anticoagulants in those patients who have had embolectomy.

Unlike in other forms of arterial surgery, where it is generally felt post-operative anticoagulation is undesirable, probably even contraindicated, follow-

ing embolectomy it is given, not, of course, for local protection, but to protect the patient against further embolic phenomena.

I generally give the patients heparin for the first forty-eight or seventy-two hours, either in a rather empirical manner, 50 to 100 mg. every four to six hours intramuscularly, with titration by Lee-White clotting times twice a day, or more desirable for the purposes of titration, 50 to 100 mg. intravenously every four to six hours, similarly controlled.

It is desirable, preoperative, to obtain a prothrombin activity determination so that you may know where you stand later on. As soon as the patient is able to take something by mouth, he can be given dicumarol, or coumadin which is more popular at the present time. Then, in the case of coumadin, the first prothrombin activity should be undertaken in twenty-four hours, and for dicumarol at the end of forty-eight hours. This must be taken three to four hours after the last dose of heparin, because it has been definitely demonstrated that heparin has a decided effect upon the prothrombin activity. As soon as the patient is controlled, heparin can be discontinued.

*Doctor Eddy:* Doctor Vargas, what anticoagulant do you use for the long-term cases?

*Doctor Vargas:* Is this question asked relating to surgical treatment of chronic cases? If so, then the answer is that I don't use any.

*Doctor Eddy:* I assume that possibly it refers to persons who have thrown off the emboli. Doctor Goldowsky, what drugs do you use for prolonged clotting control for long-term cases?

*Doctor Goldowsky:* I think that I have answered the question of anticoagulation. I think that whatever it would be used for the same method would be implied, although some may prefer to continue heparinization for a longer period.

I think that I have already stated, and I know the other members of the panel agree, that there is little indication for post-operative anticoagulation following surgery for chronic occlusive disease. How-

*continued on next page*

ever, I think that when the operation in a specific case is thrombo-arterectomy, heparin is indicated for forty-eight to seventy-two hours. Would you comment on that, Doctor Vargas?

*Doctor Vargas:* The most important thing to keep the blood vessel open is to do a pretty thoroughly accurate job. If the velocity of blood flow is high and the patient's central circulatory system is intact, maintaining a good head of pressure, the area in the vascular system that has been operated upon will stay open. If one must resort to anticoagulants, temporarily, to keep the segment of the vessel open, you are almost committed to doing this permanently. At least in our hands the results are very poor.

We were anticoagulating, until we had a rather severe hematoma in a fairly important patient, a relatively young woman. This did not end disastrously, but it was a nerve-wracking experience, and one which could have been bad. I subsequently have not used anticoagulants, and the patients have done reasonably well.

I think that in terms of long-term anticoagulation, we see it more frequently in the management of the patients who embolize, where the primary disease is heart disease. There, dicumidrol is used; but, usually, we recommend that the heart be operated upon, and the entire problem handled in that way.

*Doctor Eddy:* Doctor Hoye, here is a good question for you. Thus far, I have heard no mention of abstinence from tobacco, in the long-term care of peripheral arteriosclerosis.

*Doctor Hoye:* The only reference that I had made to tobacco was in the small portion of the end of my talk which I had to cut short. I would say that in the over-all field of the disease, the relationship between symptomatology and tobacco is poorly spelled out at the present time. Most people in this field do feel that in individual patients there is some relationship to the small vessel pathology, as seen clinically. More specifically, I firmly believe in a clinical entity known as Buerger's Disease, in which a good percentage of the patients will have a reversion of symptoms upon the cessation of tobacco.

In the sixty- and seventy-year-old patients with arteriosclerosis obliterans, I feel that the percentage of success upon cessation of tobacco probably is not adequately documented at the present time to make it a widespread therapeutic measure.

*Doctor Eddy:* Here is a question directed to Doctor Vargas. What do you do to prevent kinking of the graft in the popliteal space?

*Doctor Vargas:* We had it occur badly on one patient so that we were forced actually to take down the distal anastomosis and do it over again, putting the graft up farther.

I think that with increasing experience you get to know how to pull on the graft. These are crimped grafts, and they will give. They come in a commercial package, and will give up to six or seven inches. Before completing the anastomosis it is essential to put the graft on the stretch, and carefully check it for kinking before the graft is completed. All of these grafts need just a little bit of tension and they will do very well.

*Doctor Eddy:* Here is a very good question. A physician would like to know what the home medical treatment is in nonoperative cases.

That is a shocking thought, but a thought, nevertheless. There are many such cases at home, and they need medical treatment. They have occlusive disease. I think that in the first place, we should realize that vasodilating drugs have little or no place in this particular problem. They do have a place in the vasospastic disorders, such as Raynaud's Disease and its associated diseases.

But, in true occlusive disease, vasodilating drugs many times do more harm than good. They are not specific to the point of obstruction. The dilatation takes place throughout the body, affecting all of the blood vessels. As a result the blood pressure is frequently dropped, and many times the extremities are harmed rather than helped with their use.

I should like, also, to bring out the point that in acute occlusion one should get the patient to the hospital promptly. The best time to treat these patients is early. If one gives anticoagulant therapy and thinks that morphia, or demerol, or some such pain-killing drug will tide them over for further observation, they are doing the patient great harm. All patients who have sudden, acute episodes should be promptly hospitalized and seen by a competent vascular surgeon.

As for the home medical treatment of the chronic cases, that are nonoperative for one reason or another, I believe that great attention should be directed to the care of the feet. They should wear heavy, woolen socks; the nails should be carefully cared for. They should be told that under no circumstances should they try local treatment, such as the application of heat or cold, or various solutions such as mercurochrome or lysol. Many patients will burn themselves by treating themselves.

The head of the bed should be elevated, so that the feet will be low in relation to the heart, causing congestion in the lower extremities. This keeps the blood there that much longer, relieving the pain. Frequently, Empirin compounds with codeine and bed rest will do a lot for these people.

If they continue to have pain in spite of this sort of therapy, then they are probably candidates for amputation. Certainly, they should be hospitalized for further investigation.

*Doctor Vargas:* What do you think of Buerger's exercises in home treatment?

*Doctor Eddy:* I have never been a great advocate myself of Buerger's exercises. I know that many people use them. One recent development is a bed, which will tilt electrically, to help in this sort of a situation. I have never personally done that, nor have I been impressed by it.

*Doctor Goldowsky:* I should like to stress the dangers of applying heat to ischemic extremities, either in the home or in the hospital. We still see people putting hot water bags on ischemic extremities. Of course, it is extremely hazardous because of possible burns. Patients with inadequate circulation are unable to dissipate the heat, and are actually increasingly susceptible to burns. If you want to put anything on, an ice bag is preferable.

With respect to the late treatment of emboli, the earlier the patients are treated, the better; but I think there is a converse situation, namely, that delay no longer is a contraindication to treatment. They can be treated many hours, and even days, later, as demonstrated in our series.

The longest in our series was five days, and, as Doctor Vargas mentioned, one of eight days. Cases have also been reported in the literature as late as eight days.

*Doctor Hoye:* If it is impossible to get a patient to a hospital these methods may provide further leeway in operating on these cases successfully.

*Doctor Eddy:* I think there is a feeling now that aortography is not being used as much as it used to be. Certainly you avoid using it in aneurysms for the obvious reasons that an aneurysm might be traumatized, and very often it is not necessary in establishing a diagnosis; but, where there is a question of doubt, it can be valuable. In blocks below the aorta, especially segmental blocks of the iliacs, much valuable information can be obtained.

I believe that it is important to get as much pre-operative information as possible about the circulation, such as blocks above and below, and for this reason aortography, of course, still has an important place.

#### Providence Medical Association Meeting

Monday, December 4, 1961

*Speaker:*

Sidney Kibrick, M.D.

of Boston

*Topic:*

"The Newer Viral Agents"

#### Regional Sources of Financial Aid to Medical Students

There are three regional organizations in the United States which have been very active in developing programs to aid needy medical students.

##### For New England:

The New England Board of Higher Education (NEBHE)  
31 Church Street, Winchester, Massachusetts

"If you are a resident of Massachusetts or Rhode Island, your state can help you in securing a medical education through a program developed and administered by the New England Board of Higher Education. In an endeavor to provide expanded opportunities for medical education for New England students, the Board has developed a contractual arrangement between the states of Massachusetts and Rhode Island, and the University of Vermont College of Medicine, under which places are held for residents of the contracting states and the states pay a share of the cost of the students' education.

"How does this system work? A student from Massachusetts or Rhode Island who has been offered admission to the University of Vermont College of Medicine will receive a residency certificate which he will fill out in order to establish his eligibility for the program. The certificate is then forwarded to the headquarters of the New England Board of Higher Education for processing. If found to be a bona fide resident and accepted by the University of Vermont Medical College, the student is automatically under the program. In this case the school charges the lower resident tuition rather than the non-resident tuition fee. The student's own state pays a supplementary fee to the medical school to help meet the cost of providing his medical education.

"It is anticipated that the states of Maine and New Hampshire will also enter into similar contractual arrangements with the University of Vermont Medical College for the coming academic year."

##### For Rhode Island:

1. Rhode Island Higher Education Assistance Corp.  
199 Promenade Street  
Providence 8, R. I.
2. Rhode Island State Scholarship Program  
Roger Williams Bldg.  
Hayes Street  
Providence, R. I.

#### MANUSCRIPTS

Manuscripts for publication and correspondence relating to them should be sent to:

*Editor, RHODE ISLAND MEDICAL JOURNAL*  
106 Francis Street  
Providence 3, Rhode Island

Manuscripts should be typewritten on one side of the paper only, double-spaced, and with liberal margins. References should be placed at the end of the article and should conform to the style of QUARTERLY CUMULATIVE INDEX MEDICUS, giving author, title, journal, volume, page, month and year (e.g., Doe, J.: Calcium Therapy, Rhode Island M. J. 61:22 June, 1961). References to books, monographs and pamphlets should indicate the author, the title, the name and city of the publisher, the year of publication, edition, and page number of the reference.

**Patronize Journal Advertisers**

## AN UNUSUAL CAUSE OF GASTROINTESTINAL HEMORRHAGE

### Systemic Neurofibromatosis With Involvement of the Duodenum\*

ROBERT L. CURRAN, M.D., AND THOMAS FORSYTHE, M.D.

Authors. Robert L. Curran, M.D., Assistant Physician, Rhode Island Hospital, Providence, Rhode Island.

Thomas Forsythe, M.D., Associate Roentgenologist, Rhode Island Hospital, Providence, Rhode Island.

THE DIFFERENTIAL DIAGNOSES of gastrointestinal bleeding can usually be made on a clinical basis. In a recent cumulative review the following incidence of various causes of gastrointestinal bleeding was reported:<sup>1</sup> peptic ulcer, 65 per cent; gastritis, 11 per cent; esophageal varices, 9 per cent; hiatus hernia, 2 per cent; gastric carcinoma, 1 per cent; other causes, 2 per cent, and undetermined site, 10 per cent.

Among the rare causes of gastrointestinal hemorrhage may be listed:<sup>2,3</sup> blood dyscrasias, aortic aneurysms rupturing into the gastrointestinal tract, hereditary hemorrhagic telangiectasia (or other angiomatic conditions of the intestines), Meckel's diverticulum, small bowel tumors of multiple types, choristoma of the gall bladder (ectopic gastric mucosa), collagen diseases, sarcoidosis, amyloidosis and pancreatic disease, both malignant and inflammatory.

Neurofibromatosis is an uncommon disease. Associated small bowel involvement is an exceedingly rare complication of this disease. Rivers et al.<sup>4</sup> reviewed the entire world literature up to 1954 concerning benign tumors of the small intestine and found only 90 reported cases of neurogenic tumors. Only 13 of these were associated with generalized neurofibromatosis. A cursory review reveals several other articles pertaining to this disease complex.<sup>2,3,5-9</sup>

#### Case Report

E.P. A fifty-six-year-old white female entered Rhode Island Hospital on October 25, 1959 with a three-day history of melena associated with light-headedness and dyspnea. The history was negative for ethanol ingestion, epigastric distress, known peptic ulcer, use of antacids, hematemesis, or a history compatible with a blood dyscrasia.

Past history revealed the onset of generalized

\*From the Departments of Medicine and Radiology, Rhode Island Hospital, Providence, Rhode Island

cutaneous neurofibromatosis at age 30, a left nephrectomy performed at another hospital in 1951, for which the pathological report was chronic and acute pyelonephritis, and a left salpingo-oophorectomy in 1951 for unknown reasons.

She was admitted first to this hospital on March 9, 1959 with a history of melena. Her admission laboratory studies revealed a hemoglobin of 4.6 grams per cent, hematocrit 15, white blood count 10,700, polymorphonuclear leukocytes 78, lymphocytes 22, and a negative urinalysis. Subsequent studies included blood urea nitrogen 15 mg. per cent, bromsulfalein retention 18 per cent, alkaline phosphatase 7.3 King-Armstrong units, prothrombin activity 75 per cent, total protein 7.3 gm. per cent with albumin 4.4 gm. per cent, platelet count 252,000, bilirubin 0.81 mg. per cent total with direct 0.04 mg. per cent, serum fibrinogen 0.77 gm. per cent, Coombs' test negative direct and indirect, electrocardiogram within normal limits, and a normal chest X-ray.

Stool benzidine was 4 plus. Excluding hemorrhoids, rectal and sigmoidoscopic examinations were negative. A barium enema showed diverticulosis of the distal colon. A gastrointestinal series was reported as demonstrating only a small, sliding hiatus hernia. An intravenous pyelogram revealed nonvisualization of the left kidney with compensatory hypertrophy of the right kidney. Surgical opinion was that, having failed to demonstrate the site of the hemorrhage, the obvious pathology should be treated. On the patient's tenth hospital day, a repeat sigmoidoscopy and hemorrhoidectomy were performed.

During her post-operative course the hemoglobin slowly fell. Stool was positive and gastric aspirate negative for occult blood. Repeat barium enema and gastrointestinal series were reported as unchanged from the initial examinations. After a thirty-two-day hospital stay the patient was discharged on April 10 on a low residue diet and oral iron. Further studies, such as exploratory laparotomy, were deferred.

Her second admission was on April 24, 1959. Once again melena was the presenting complaint. An unchanged physical examination, serial negative stool benzidines, hemoglobin of 12.5 and hematocrit



FIGURE 1

Photograph of the patient demonstrating multiple cutaneous neurofibromata and café-au-lait spots.

of 39, which were significantly higher than on discharge, resulted in the melena being ascribed to the oral iron therapy. She was discharged after three days.

*Family history* revealed neurofibromatosis in both parents and four sisters.

*Physical examination:* B. P. 140/80. P. 120. T. 101° per rectum. A thin, white female appearing older than her stated age, with obvious pallor of her skin and mucous membranes. The skin showed multiple soft, sessile, well-circumscribed tumors, varying in size, present over the entire body. Café au-lait spots were also seen in large numbers. See Figure 1. Telangiectasia, ecchymosis, buccal or labial pigmentation were absent. Other physical findings included dental caries, Grade I fundoscopic changes, a Grade I (1/6) systolic murmur along the left sternal border, negative pulmonary findings, slight epigastric tenderness, and a negative rectal examination.

The stool was positive and gastric aspirate negative for occult blood. Admission hemoglobin was 6.6 with a hematocrit of 19.5. Other laboratory findings: urinalysis negative, glucose 101 mg. per cent, blood urea nitrogen 49 mg. per cent, creatinine 1.3 mg. per cent, platelets 214,000, bleeding time 30 seconds, and clotting time 13 minutes.

A third gastrointestinal series was performed. The small, sliding hiatus hernia described previously was again noted. In addition, however, a sharply circumscribed lesion was seen projecting into the lumen of the duodenum at about the junc-

tion of its descending and transverse portions, just below the usual location of the ampulla of Vater. The tumor was smoothly rounded, measured 2.5 cm. in diameter, and appeared intramural, extramucosal in type. On many of the films a small, irregular, central ulceration was noted. Review of the films of the gastrointestinal examinations performed in March and April, 1959, demonstrated the tumor. See Figures 2 and 3.



FIGURE 2

Film of the upper gastrointestinal tract showing the sliding hiatus hernia and the lesion involving the lower descending portion of the duodenal loop.



FIGURE 3

Spot film of the duodenal neurofibroma showing the irregular central ulceration.

At laparotomy on October 29, 1959 the tumor demonstrated by X-ray was readily identified. An additional small 1 cm. tumor was found immediately proximal to the larger lesion. Frozen section was reported as consistent with a leiomyoma. The surgeon, therefore, elected to perform a local resection with end to end anastomosis. The suture line

*continued on next page*

jeopardized the ampulla of Vater and for this reason the common bile duct and pancreatic duct were reimplanted into the duodenum. T-tube drainage of the common bile duct as well as a gastrostomy were performed.

The postoperative course was complicated by mild icterus. On the fifth postoperative day the bilirubin rose to 5.9 mg. per cent and the alkaline phosphatase to 29 King-Armstrong units. A T-tube cholangiogram on the tenth postoperative day showed normal biliary radicles and unobstructed passage of dye into the small intestine. The T-tube was removed on the twelfth postoperative day and the gastrostomy tube on the sixteenth postoperative day. A gastrointestinal series on November 23, 1959 showed moderate narrowing at the site of the duodenal anastomosis. No evidence of fistulization was observed.

The patient's convalescence was otherwise uneventful and she was discharged on November 27, 1959. At follow-up examination seven months later the patient was doing well.

*Gross pathologic examination* revealed an extra-mucosal intramural mass measuring 3 cm. in diameter protruding 0.7 cm. above the mucosal surface of the duodenum. On the mucosal surface of the mass there was a 0.7 cm. in diameter ulceration with a firmly adherent blood clot. A small, 1 cm. in diameter, nodule was present just proximal to the first tumor (Figure 4).

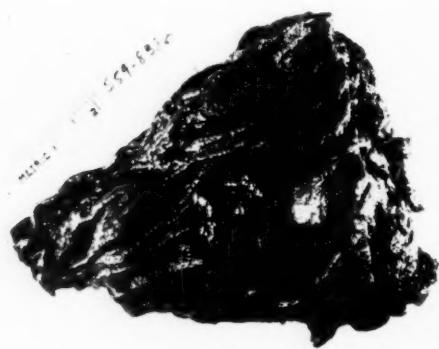


FIGURE 4

Photograph of the gross specimen showing the larger intramural extramucosal tumor with central ulceration.

*On microscopic examination* the tumor consisted of uniform, spindle-shaped cells arranged in bundles. There was occasional palisading. Phosphotungstic acid hematoxylin stain demonstrated fine fibrils which were distinctly different from the myofibrils of the adjacent, smooth muscle. Microscopic examination of the small bowel tumors and skin lesions excised at the time of surgery were virtually

identical, so that the bowel tumors were considered to be neurofibromata rather than leiomyomata (Figures 5, 6).

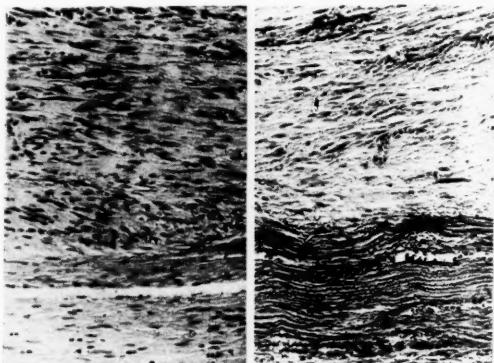


FIGURE 5

Photomicrograph H&E stain 600X. Portion of duodenal tumor above sharply demarcated from the intact muscularis below (left).

FIGURE 6

Photomicrograph PTAH stain 1000X. Portion of same tumor shows distinctly different fibrillary pattern from the normal muscularis propria below (right).

#### Discussion

Neurofibromatosis involving the gastrointestinal tract is a rare finding. As in the case described, the blood loss usually occurs as a consequence of progressive thinning and subsequent ulceration of the mucosal lining of the gastrointestinal tract by a progressively enlarging, intramural tumor mass. It is conceivable, as with other intramural, small bowel tumors, that neurofibromata could be a cause of intestinal obstruction due to mechanical involvement, the lead point of an intussusception, or part of a volvulus if a fibrous attachment to an extra-intestinal structure exists.

When seen in association with generalized neurofibromatosis, involvement of the intestinal tract is usually multifocal. Multiple tumors of varying size and shape may be seen at irregular intervals along the entire length of intestine. Even at laparotomy it may be difficult to localize the site or sites of bleeding. If resective surgery is performed, sufficient bowel must be left to avoid development of a malabsorption syndrome.

Radiographically, a benign neurogenic tumor of the duodenum appears as an intramural, extra-mucosal lesion. It is sharply circumscribed, arises from one wall and projects into the lumen of the bowel as a rounded, somewhat lobular, filling defect. There are no radiologic features which would serve as points of differentiation from benign, small bowel tumors of other types. The coexistence of a small bowel lesion having the previously described characteristics and neurofibromatosis suggests the diag-

nosis of neurofibroma of bowel, despite its rarity.

On Roentgen examination the lesions of the small bowel are often inconspicuous, not easily demonstrated, and occasionally missed. This is particularly true in the jejunum and ileum where many areas are intermittently obscured during a small bowel examination by adjacent barium-filled loops. The small size of the tumors adds to the problem. The duodenum, however, is visualized more readily, and should be carefully scrutinized fluoroscopically as part of every roentgenologic examination of the upper gastrointestinal tract. This, together with multiple films, should uncover most tumors involving the small intestine.

Neurofibromatosis may first be manifested by specific complications in other areas. The tumor may occur in any organ or tissue. More common locales for difficulty resulting from systemic neurofibromatosis are: mediastinum, brain stem—in particular the acoustic neurinoma, spinal cord, and bones<sup>10</sup> where many types of lesions may occur. Another problem is presented by an estimated 10 to 15 per cent of cases that develop sarcomatous changes in the neurofibromata.<sup>11</sup>

### SUMMARY

An unusual case of gastrointestinal hemorrhage secondary to systemic neurofibromatosis with visceral involvement of the gastrointestinal tract is presented. The literature is briefly reviewed.

The authors gratefully acknowledge the assistance of GEORGE MEISSNER, M.D., *associate pathologist* at the Rhode Island Hospital, in the preparation of this study.

### REFERENCES

- <sup>1</sup>Gray, S.; Olson, T.; and Manrique, J.: Hematemesis and Melena. *Med. Clinics No. Amer.* 41:1327, 1957
- <sup>2</sup>Brick, I. A.; and Jeghers, H. J.: Gastro-intestinal Hemorrhage (Excluding Peptic Ulcer and Esophageal Varices). *New Eng. J. Med.* 253:458, 511, 555, 1955
- <sup>3</sup>Pessel, J. F.; Beairsto, E. B.; Wise, J. S.; Edwards, M. H.; Scarovelli, G.; and Rathmell, T. K.: Unusual Causes of Gastro-intestinal Hemorrhage. *Gastro-enterology* 31:538, 1956
- <sup>4</sup>Rivers, L.; Silverstein, J.; and Tope, J. W.: Benign Neoplasms of the Small Intestine: A Critical Comprehensive Review with Reports of 20 New Cases. *Int. Abst. Surg.* 102:1, 1956
- <sup>5</sup>Grill, J.; and Kuzma, J. F.: Recklinghausen's Disease with Unusual Symptoms from Intestinal Neurofibroma. *A.M.A. Arch. Path.* 34:902, 1942
- <sup>6</sup>Farrar, T. F.; and Chappell, F. W.: Severe Gastro-intestinal Hemorrhage Resulting from Recklinghausen's Disease. *A.M.A. Arch. Surg.* 79:106, 1959
- <sup>7</sup>Gompertz, M. L.; and Gourley, R. D.: Follow-up Observations on Patients with Upper Gastro-intestinal Hemorrhage of Undetermined Etiology. *Gastro-enterology* 32:528, 1957

<sup>8</sup>Kleitsch, W. P.; Kehne, J. A.; and Gutch, C. F.: Gastro-intestinal Hemorrhage Due to Neurofibromatosis. *J.A.M.A.* 147:1434, 1951

<sup>9</sup>Walker, P. E.: Neurinoma of the Small Intestine. *Amer. J. Clin. Path.* 19:827, 1949

<sup>10</sup>Levene, L. J.: Bone Changes in Neurofibromatosis. *A.M.A. Arch. Internal Med.* 103:570, 1959

<sup>11</sup>Preston, F. W.; Walsh, W. S.; and Clarke, T. H.: Cutaneous Neurofibromatosis (von Recklinghausen's Disease): Clinical Manifestations and Incidence of Sarcoma in 61 male patients. *A.M.A. Arch. Surg.* 64:813, 1952

## E. P. ANTHONY, INC. Druggists

WILBUR E. JOHNSON, Phar. D.  
RAYMOND E. JOHNSTON, B.S.

178 ANGELL STREET  
PROVIDENCE, R. I.  
GAspee 1-2512  
Pharmacy License #225

### The Truth About the Cost of Hospital Miracles

Whenever I hear someone praise hospitals for their miracles and then in the same breath criticize today's hospital costs, I get a bit irritated.

... Everyone is thrilled by the progress in hospitals today—"blue baby" operations, open heart surgery, the help given once "hopeless" cases. Even the undramatic appendectomy points up hospital progress. Instead of spending 3 weeks in the hospital as he used to, the patient now spends about 5 days. And for cases of all kinds, the average stay is down to less than 8 days.

"Miracles" like these and "higher hospital costs" go together. You can't have one without the other.

Working miracles on order demands specialized new equipment. It's complicated and it's expensive. Just a "blood pump" and a sterilizer, for example, cost more than an eight-room house. Machines are supposed to cut down manpower. In industry, they do. But not in hospitals. Here they boost it, call for more help—for specially trained technicians.

Five years ago, 156 hospital employees were needed for every 100 patients—now it takes 224. Just the payroll in hospitals accounts for two thirds of the expenses... when we... okay a 5-cent hourly pay raise for our employees, we are increasing each patient's bill by nearly one dollar a day.

And it isn't just hospital payrolls that are up. Bread, beds, bandages—everything costs more.

... Actually, it is only because of high standards, careful managing, and a real dedication that hospital costs aren't far higher. Everything considered... hospital service today is a bigger value than ever... the truth about hospital costs is—"miracles cost money!"

... Walter F. Perkins, Industrialist; President,  
Board of Trustees, The Johns Hopkins Hospital,  
Baltimore, Maryland.

# Editorials

## PERIPHERAL VASCULAR OCCLUSIVE DISEASE

This issue of the Journal has been devoted largely to a symposium on Peripheral Vascular Disease presented before the one hundred and fiftieth anniversary meeting of the Rhode Island Medical Society in May, 1961. An excellent panel consisting of five Rhode Island surgeons experienced in the management of vascular problems discussed various aspects of the pathogenesis, diagnosis, and treatment of acute and chronic occlusions. The most advanced concepts regarding these disorders and their surgical and medical management were outlined. A balanced view regarding the true value of surgical procedures was maintained without losing sight of the brilliant results which are at times possible by direct approach to the vessels. These papers, despite their optimistic tenor, leave no doubt that ultimate success in these diseases must come from metabolic advances rather than from some unforeseen surgical breakthrough.

The competence of these presentations has caused

us to ruminate about some other matters. We feel that the Rhode Island medical community has most certainly come of age when it can put on the platform five mature practitioners in an area as specialized as this, yet have sufficient depth to field another team of experts in the same specialty of equal size and equivalent experience and judgment. This presentation was a highly professional job which, despite its indigenous origins, was quite on a par with those regularly staged before us by visitors from university centers. It reminds us of that old saw about an expert being a ---- from out of town with a box of slides.

One other thought occurs to us. There are actually very few clinical fields in which this could not be done or in which, furthermore, a prospective medical school will find this community wanting. Perhaps its founding fathers will be well advised not to consider Rhode Island a vacuum but rather to look around locally for a little sensible advice.

## EDUCATION IN A FREE SOCIETY AND CLASSICAL HIGH SCHOOL OF PROVIDENCE

BEFORE THE RECENT CONGRESS of the American College of Surgeons, held in Chicago in October, Admiral Hyman Rickover of atomic submarine fame delivered some pungent and vigorous comments on his favorite theme, *Education in a Free Society*. He observed, "I am aware that the topic of my speech—*Education in a Free Society*—falls neither in your professional specialty nor into mine. But it is a public issue of grave import." "Our country's need for educated people is great," he added. "We must not sacrifice it to our obsessive desire that children be spared the experience of discovering that some others are brighter than they. . . . Two of the progressive dogmas that have greatly damaged our children should be abandoned forthwith," the right to choose what they wish to study at the expense of a carefully planned sequential study program, and "The pernicious progressive notion . . . that democratic schools must 'educate

the whole child. . . .' There is implicit in it the intent to use the school as a social agency, as a tax-supported instrumentality for equalizing differences in home backgrounds." He climaxed his remarks with this blockbuster: "Scholastic standards are rising, but unfortunately at a snail's pace. If we want to be competitive educationally with other advanced nations, we shall have to put an end to the substitution in our public schools of life-adjustment and vocational training for basic education. Such courses as 'How to be Likeable, Loveable, and Dateable,' how to arrange a wedding, manage the family budget, and all the trivia so dear to educational progressives, will have to be taught after hours, if at all. The traditional division of educational responsibilities between home and school must be restored."

As Admiral Rickover emphasized, the problem of secondary education does not fall either within his professional purview, nor within ours. But as physi-

cians we nevertheless have a twofold concern with this problem. More specifically as it forms the basis for a sound and well-rounded medical education, and more generally as a means of preparing well-educated citizens for the growing demands of modern society.

In this connection we have watched with unconcealed dismay the attempts over the years to destroy or dilute the standards maintained for generations in the hallowed, if somewhat dusty, halls of Classical High School of Providence, Rhode Island. It is true that Mr. James Bryant Conant has selected that traditionally American institution, the comprehensive high school, as the vehicle for strengthening American high school standards. But, a product himself of Roxbury Latin School and Harvard College, he has been unwilling to recommend that the established Latin schools of the Eastern Seaboard be liquidated. Recent news reports indicate that, with federal aid, a new Classical High School will be built to replace the present obsolete structure. Furthermore, Mr. James L. Hanley, superintendent of schools in Providence, is to be congratulated for recommending that the ninth grade be continued at Classical, despite pressure from the junior high schools which feel that their best stu-

dents are siphoned off by this procedure. Mr. James K. Sunshine recently commented in the PROVIDENCE SUNDAY JOURNAL (October 8, 1961) that "Classical is not just another high school. It has . . . an enormous reputation among parents, alumni and colleges that is largely well-deserved, and a forceful magic that coaxes the best from pupils in a way that is unmatched by any other school in the state and probably by few in any other state." He added, however, that "it is also an educational anachronism that has barely noticed the real accomplishments of the last decade. Fearful of the 'life adjustment' and other exotic movements of the twentieth century, it has clung rigidly to the nineteenth."

It is difficult, particularly in view of the apparently increasing modern requirements for earlier and better training in mathematics and science, to disagree entirely with Mr. Sunshine's observation that "The basic issue . . . is whether Classical shall be changed in *any* way. In the light of all that has happened in education and in the recognition of the nation's need for it in the last ten years, there is no real reason to believe that Classical's limited program is above change." We must not, however, in our zeal for change throw out the baby with the bath.

## COMPUTERS AND MEDICINE

**A** COMPUTER CENTER at Brown University and increasing references to computers in medical science signal the advent of computers in clinical practice.

What a computer can and cannot do is not generally understood. A computer calculates any mathematical operation known to man regardless of how complex, and does it in seconds. Since all logic is reducible to mathematical formulation, all logical problems are rapidly solved by a computer.

Diagnosis and treatment are logical problems and hence soluble by a computer in seconds. In clinical practice only the organization of our data into logical sequences of reasoning called programming is needed to make computers of immeasurable clinical value. In several branches of medicine a good start has been made and we may expect the literature to reflect these beginnings.

Examples will illustrate computer use. Diagnosis is a science of probabilities wherein a set of physical findings are correlated with several possible structural changes (pathology). The best probability is the best diagnosis. The human brain as a computer does this. The better the diagnostician, the better human computer he is. Since the process is logic, it is mathematical and may be done by a machine. The machine will do it rapidly and accurately, if fed all the data once a program has been developed. It is in programming that our current need is greatest. An

extension of technology will permit many of the observations needed in diagnosis to be fed directly into the computer. A highly developed polygraph is the prototype. Pulse, temperature, blood pressure, and respirations are examples of data which can be obtained automatically and fed directly into a computer. Pain, weight loss, and historical items would be recorded on devices similar to punch cards. All the information is logically and mathematically weighted by the machine and a list of possible diagnoses with their relative probabilities obtained at almost instantaneous speed. A single computer, central in location, might well handle data from physicians' offices fed in by telephone connections.

Ideal treatment is based on many variables—age, sex, life expectancy, idiosyncrasy, drug toxicity, and all the factors a physician integrates in arriving at treatment. Logically the physician chooses a strategy of therapy. This strategy is easily reduced by logical analysis to mathematical calculation. We seldom do it in practice because of the complexity and time involved. A computer negates all complexity and time factors. Therapy and therapeutic strategy will be improved greatly. An extension of automatic observations by polygraphs, for example, will simplify anesthetic administration and may in fact make possible automatic administration. The use of computers in dialysis and artificial kidney regulations is obvious. The possibilities of its use are

*continued on next page*

endless.

The image and function of a physician will not change by the use of computers. By opening up new fields of study and application more, not fewer, doctors will be needed. Printing, communication

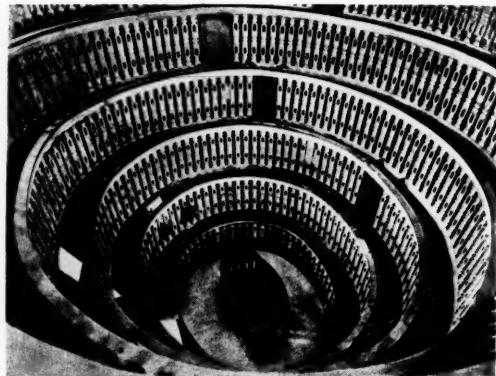
advances, speed of travel, synthetic drugs, all have merely added to the excitement and thrill of medical practice. New excitement and adventure comes with the prospects of widespread computer applications in medicine.

## PILGRIMAGE TO PADUA

EVERYONE goes to Venice. Its eternal charm and color have attracted visitors for five hundred years. Indeed it is said that ten million travelers a year find their way to its teeming canals and its spacious and impressive Piazza San Marco. No more than eighteen miles away, or forty-five minutes by bus over a modern auto strada, lies Padua, a modest town, but infinitely more important in the annals of medicine; yet by contrast barely a few thousand devoted pilgrims find their way to its historic shrines. Whereas Venice did not even exist in Roman times, Padua, known as Patavium, was, in these days, one of the richest cities of Northern Italy, and was in fact the birthplace of Livy, the great Roman historian. In later times it was the residence of Dante and of the painter Mantegna, and known to modern readers because Shakespeare's shrew was tamed there.

The art treasures of Padua, while not lavish in their profusion, have great importance in the history of Italian art. In the center of the town stands the imposing Palazzo della Ragione, teeming with some four hundred frescoes painted by the followers of Giotto, and the modest Scrovegni Chapel, the interior of which is covered with frescoes by Giotto himself, painted in 1305 and 1306, and generally regarded to be his greatest work.

But to the medical pilgrim the university is the focus of interest. The University of Padua was founded in 1222 by teachers and students who had fled because of oppressive treatment from Bologna, the oldest university in Europe. The students did not immediately find their new hosts more accommodating; but they lingered on and eventually the school prospered. As early as the fourteenth century dissection was practiced at Padua, but did not receive official sanction until 1429, twenty-four years later than Bologna. In fact at that time Bologna was conceded to be the world's center of anatomical learning. However, beginning with the sixteenth century Padua assumed unquestioned leadership. Gentile Foligno, a graduate of Bologna, went to Padua in 1327 as professor of medicine. He carried out public dissections and performed autopsies. He was the author of *Concilia Contra Pestilentiam*, a disease to which he himself eventually succumbed in 1348. Following him was a



long line of brilliant teachers and students, the like of which few medical schools can boast. Among them were Thomas Linacre, founder of the Royal College of Physicians of London and physician to Queen Elizabeth; John Caius, nine times president of the Royal College of Physicians of London, and substantial benefactor of his college at Cambridge University; Vesalius, the greatest anatomist of his age; Fallopio; Fabrizio (Fabricius); the ageless William Harvey; Fracastoro, best known for his poem, *Syphilis sive morbus gallicus* (which changed the name of "the French disease to syphilis); culminating in the great eighteenth century physician and anatomist, Giovanni Battista Morgagni, justly famed as the Father of Pathology. First edition folio copies of his classical *De Sedibus et causis Morborum*, incidentally, can be found in the library of the Rhode Island Medical Society.

In 1501 the various halls of study of the University were gathered together in the present building, now located in the center of downtown Padua. This edifice, called Il Bo because there was formerly a hotel there with the sign of an ox, presently houses only offices of the University, the modern schools of the various faculties now being located elsewhere in town. Albertus Magnus, Galileo, and Morgagni all taught in this building. One of its historical treasures is the crude podium from which Galileo, the greatest mathematician of his day, taught his devoted students. The goal of all medical visitors is the anatomical theater, preserved for all posterity.

with loving care. Built in 1544 by Fabricius at his own expense, it is the very oldest anatomical theater in Europe. Constructed of wood, and not large, it is characterized by circular galleries, stacked tier on tier, so narrow that the students were obliged to stand, yet able by the same token to look down

vertically upon the cadaver virtually from above. Also to be seen is the passage through which the corpus was introduced. Morgagni, too, taught anatomy in this room.

Indeed the shades of the great stalk the halls of historic Il Bo.

## INERTIA, NEWTON, AND SAFETY BELTS

**T**HE AUTOMOBILE MODELS for 1962, recently unveiled, have been equipped with attachments for safety belts. Injury and death may be reduced an estimated 50 per cent by the use of the belts. Newton's law states that a body in motion continues in motion until acted upon by an opposing force. A safety belt applies the opposing force to the abdomen and pelvis, where relatively little injury will be sustained. This contrasts with that caused when the body is hurled through a sprung door or open window, allowing the head to hit a tree or other obstacle. Things at rest remain at rest until inertia is overcome. There has been considerable inertia in accepting seat belts. The American Medical Asso-

ciation, the United States Public Health Service, the American College of Surgeons, the National Safety Council, and many state legislatures have been instrumental in securing the inclusion of the standard attachments in 1962 automobiles.

This is barely a beginning. Even by 1963 less than 10 per cent of all cars will be equipped, and the death and injury toll will be down a mere 5 per cent. We will still have a job to do in promoting installations in the ninety per cent of cars without protection. By continuing our support of safety belt installations the momentum will be applied to the program, and not to our patients.

## THE EIGHTH OLDEST STATE MEDICAL ASSOCIATION

**A**S WE APPROACH the sesquicentennial year of the Rhode Island Medical Society we continue to discover new data regarding the development of the state medical associations in the nation, a development that has apparently received very little historical study. For many years records were published to indicate that our organization was the ninth oldest state group, but our researcher now indicates clearly that we are properly and rightfully the eighth oldest state medical association.

The previous confusion on the matter stemmed from the fact that so-called "state" societies were initiated in some parts of the country that were not true state societies. For example, in Charleston, South Carolina, on December 24, 1789, there was instituted a medical society of South Carolina which, however, was composed of physicians of Charleston. They subsequently, in 1847, voted that "a committee be appointed to invite the individual members of the Medical profession throughout the State, by the printing of a circular, to assemble in the city of Charleston, on the 14th day of February, 1848, for the purpose of organizing a State Medical Society."<sup>1</sup>

On the designated February date the South Caro-

lina Medical Association was organized, and the Medical Society of South Carolina (Charleston) became one of its constituent societies. In 1907 the Charleston County Medical Society took the place of the older organization as the constituent body.

A similar situation wherein a city group utilized a state society title was that of the Georgia Medical Society of Savannah which was incorporated in 1804, and then became a constituent society of the Medical Society of the state of Georgia, the official state association when it was organized in 1849.

Exhaustive research, therefore, conclusively establishes the following historical order of organization of state medical associations that have maintained continuous existence:

- 1766—The Medical Society of New Jersey
- 1781—The Massachusetts Medical Society
- 1789—The Medical Society of the State of Delaware
- 1791—The New Hampshire Medical Society
- 1792—The Connecticut State Medical Society
- 1798—The Medical and Chiurgical Faculty of the State of Maryland
- 1807—The Medical Society of the State of New York
- 1812—The Rhode Island Medical Society

<sup>1</sup>South. J. Med. & Phar. 2:724, 1847

**HOUSE OF DELEGATES**  
**of the**  
**RHODE ISLAND MEDICAL SOCIETY**

**Report of Meeting Held September 27, 1961**

A MEETING of the House of Delegates was held at the Rhode Island Medical Society Library on Wednesday, September 27, 1961. The meeting was called to order by the President, Doctor Samuel Adelson, at 8:10 P.M. The following were in attendance:

**BRISTOL COUNTY:** Robert W. Drew, M.D.  
**KENT COUNTY:** Peter C. Erinakes, M.D.; Edmund T. Hackman, M.D. **NEWPORT COUNTY:** Philomen Ciarla, M.D.; Charles Dotterer, M.D. **PAWTUCKET DISTRICT:** Walter J. Dufresne, M.D.; Earl Kelly, M.D.; Robert C. Hayes, M.D.; Francis E. Hanley, M.D., and Edward J. Butler, M.D. **WASHINGTON COUNTY:** Freeman B. Agnelli, M.D.; James A. McGrath, M.D. **WOONSOCKET DISTRICT:** Joseph A. Bliss, M.D. **OFFICERS OF THE RIMS** (other than delegates): Samuel Adelson, M.D.; Arthur E. Hardy, M.D., and J. Murray Beardsley, M.D. **STATE HEALTH DEPT. DIRECTOR:** Joseph E. Cannon, M.D.\* **IMMEDIATE PAST PRESIDENT OF RIMS:** Earl J. Mara, M.D. **PROVIDENCE MEDICAL ASSOCIATION:** Robert R. Baldridge, M.D.; John T. Barrett, M.D.; Irving A. Beck, M.D.; J. Robert Bowen, M.D.; Bertram H. Buxton, Jr., M.D.; Wilfred I. Carney, M.D.; Francis H. Chafee, M.D.; Harry E. Darrah, M.D.; Michael DiMaio, M.D.; Henry B. Fletcher, M.D.; Warren Francis, M.D.; Frank Fratantuono, M.D.; J. Merrill Gibson, M.D.; John F. W. Gilman, M.D.; Seebert J. Goldowsky, M.D.; Stanley Grzebien, M.D.; John C. Ham, M.D.; Waldo O. Hoey, M.D.; Walter S. Jones, M.D.; Robert V. Lewis, M.D.; Frank C. MacCardell, M.D.; William J. MacDonald, M.D.; William S. Nerone, M.D.; Francis W. Nevitt, M.D.; Arnold Porter, M.D.; William A. Reid, M.D.; Ralph D. Richardson, M.D.; Carl S. Sawyer, M.D.; Stanley D. Simon, M.D., and John Turner II, M.D.

ALSO PRESENT: Jesse P. Eddy, M.D., chairman, Scientific Work Committee; Harold Williams, M.D., chairman, Committee on Mental Health, and John E. Farrell, S.C.D., executive secretary.

**Report of the Secretary**

Doctor Michael DiMaio, secretary, noted that his report was included in the handbook.

\*Without the power of vote.

**Action:** A motion was made, seconded and passed that the report of the secretary as presented in the handbook be received and placed on file.

**Report of the Treasurer**

Doctor J. Murray Beardsley stated that his complete report on the investment program, and a tentative budget for 1962, were included in the handbook, and he was prepared to discuss any item for the delegates.

**Action:** A motion was made, seconded and adopted that the report of the treasurer as submitted be approved and placed on file.

**Recommendations for the Council**

Doctor Adelson noted that the Council had submitted two recommendations, as follows:

I. The Council recommends that Doctor George W. Waterman, whose term as a trustee of the Benevolence Fund of the Society terminates this year, be reappointed for a three-year term to end in 1964.

**Action:** The adoption of the recommendation was moved, seconded and passed.

II. The Council recommends that the annual dues for 1962 for active members of the Society more than one year in medical practice be \$50, and for members in their first year of practice, \$25.

**Action:** The adoption of the recommendation was moved, seconded, and passed.

**Communications**

I. A communication from the state department of health relative to a glaucoma detection program, included in the delegates' handbook, was reviewed. Doctor Cannon, state director of health, favored the suggestion that the matter be considered by the ophthalmologists of the state.

**Action:** A motion was made that the proposal for a glaucoma detection program by the state department of health be referred to the Rhode Island Ophthalmological Society with the request that such society report to the January, 1962, meeting of the House of Delegates with recommendations regarding the proposal. The motion was seconded and passed.

\* \* \*

*continued on page 654*

# 'ACTIFED'<sup>®</sup>

*Decongestant / Antihistamine*

THE POTENTIATED DECONGESTANT



**provides symptomatic relief of nasal congestion and rhinorrhea of allergic or infectious origin**

**Many patients whose symptoms are inadequately controlled by decongestants or antihistamines alone respond promptly and favorably to 'ACTIFED'.**

'ACTIFED' contains:  
 'Actidil'<sup>®</sup> brand Triprolidine Hydrochloride  
 'Sudafed'<sup>®</sup> brand Pseudoephedrine Hydrochloride

in each	in each tsp.
Tablet	Syrup
2.5 mg.	1.25 mg.
60 mg.	30 mg.

**safe and effective for patients of all ages suffering from upper respiratory tract congestion**

DOSAGE

	TABLETS	SYRUP (5 cc. tsp.)	} three times daily
Adults and older children	1	2	
Children 4 months to 6 years of age	½	1	
Infants through 3 months	—	½	



BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

## HOUSE OF DELEGATES

*continued from page 652*

II. A communication from Doctor Herman A. Lawson noting his resignation as chairman of the Rhode Island Advisory Committee to the Selective Service System, and asking that the Society nominate three physicians to the executive secretary of the National Committee from whom he would select one to be the new Rhode Island chairman.

*Action:* A motion was made that the House name Doctors Morgan Cutts, Wilfred I. Carney and Waldo O. Hoey, leaving to the discretion of the president of the Society the naming of an alternate should either of these three physicians withdraw from the appointment. The motion was seconded and passed.

### Sesquicentennial Committee

Doctor Arnold Porter, speaking for Doctor Thomas Perry, chairman of the Sesquicentennial general committee, reported on the plans in progress for a Citizens Committee, and school tour program of the Health Exposition, a special supplement in the PROVIDENCE SUNDAY JOURNAL, the special assessment imposed by the Society on the members to be paid in October, 1961, the work of the Exposition committee, and the plans for an historical supplement to the RHODE ISLAND MEDICAL JOURNAL. He urged all delegates to inform their constituent associations of the public service features of the celebration.

*Action:* A motion was made to approve the report made by Doctor Porter. The motion was seconded and passed.

### Report of Committee on Annual Meeting

Doctor Jesse P. Eddy III reported on the plans of the Committee on Scientific Work and Annual Meeting. He stated that several meetings had been held, that the committee had voted to stage the meeting at the Marvel Gymnasium of Brown University, and that arrangements for an enlarged technical exhibit area, as well as for a scientific exhibit display, had been developed, that Doctor Sabin had accepted the invitation to be the Chapin orator, and that the committee hoped to complete its program of scientific lectures within the next month.

*Action:* A motion was made, seconded and passed that the report of the Scientific Work Committee be approved.

### New England Postgraduate Assembly

Doctor Adelson noted that the New England Postgraduate Assembly would be held at Boston on November 7, 8 and 9, and for the first time under the auspices of the Council of the New England State Medical Societies. He urged attendance at the Assembly by Rhode Island physicians.

## RHODE ISLAND MEDICAL JOURNAL

### Cancer Committee

The president noted that the report of the Cancer Committee was included in the handbook.

*Action:* A motion was made, seconded and passed that the report of the Cancer Committee be received and placed on file.

### Diabetes Committee

The president noted that the report of the Diabetes Committee was included in the handbook.

*Action:* A motion was made, seconded and passed that the report of the Diabetes Committee be received and placed on file.

### Medical Economics Committee

Doctor Stanley D. Simon, chairman of the Medical Economics Committee, reviewed his report as presented in the handbook. Various items in the report evoked general discussion.

*Action:* A motion was made that the resolution relative to a Fee Review Committee be adopted. The motion was seconded and adopted without dissenting vote.

*Action:* A motion was made, seconded and passed that the report of the Committee on Medical Economics as a whole be received, approved and placed on file.

### Mental Health Committee

The president noted that the report of the Mental Health Committee was included in the handbook. Doctor Harold Williams, chairman of the committee, stated that he had no comment to make on the report.

*Action:* A motion was made, seconded and passed that the report of the Mental Health Committee be received and that the resolution therein be adopted.

### Physicians Service

Doctor Earl J. Mara, vice president of Physicians Service, reported briefly on the report of the June 19 meeting of the board of directors, as included in the handbook, and on a recent board meeting.

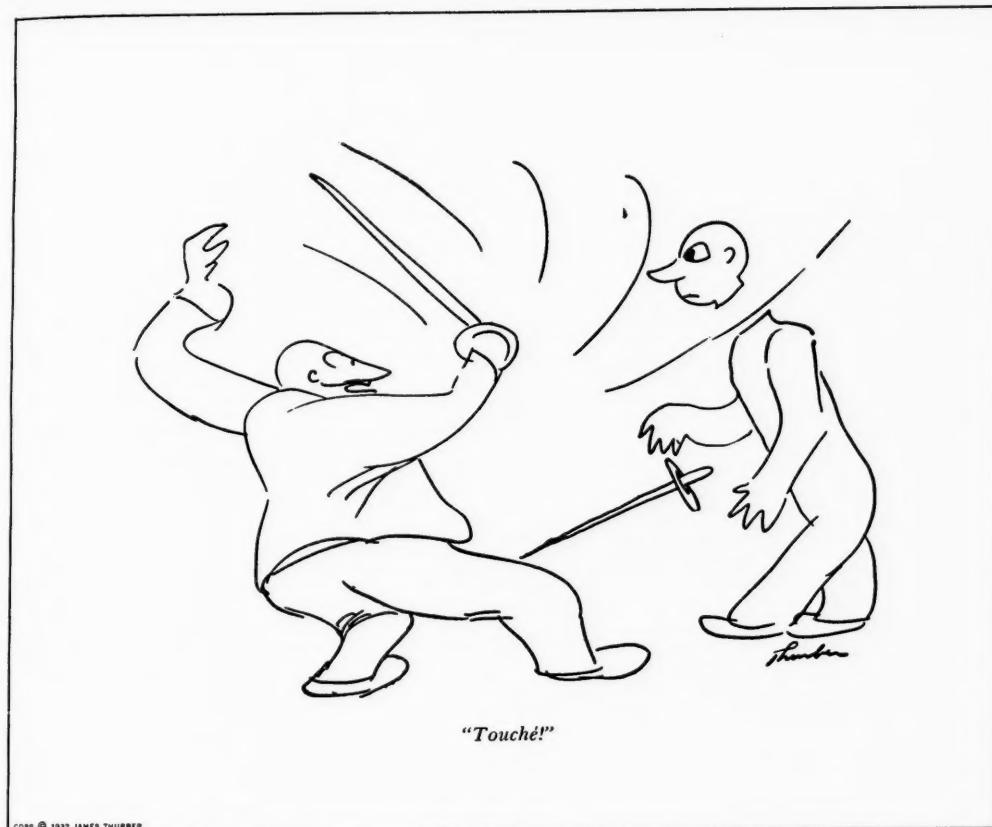
*Action:* A motion was made, seconded and passed that the minutes of the June 19, 1961 meeting of the board of directors of Physicians Service, as submitted to the House, be received.

\* \* \*

No action was taken on a proposal that a representative of the Physicians Service administrative staff, preferably the executive director or his designate, be present at meetings of the House of Delegates to report on the program. Members pointed out that several members of the board of directors are members of the House and available to report.

\* \* \*

*continued on page 656*



For a better way to treat headache,  
prescribe **Trancoprin®**

**How Trancoprin relieves pain:** Because most pain is accompanied by muscle spasm and tension, good medical practice suggests use of an analgesic that will relax skeletal muscles as well as dim pain perception. Such an analgesic is Trancoprin — a combination of aspirin and Trancopal®, a proved, safe, skeletal muscle relaxant and tranquilizer. Trancoprin can be prescribed for any pain, except pain of such severity that a narcotic is needed.

**Dosage:** Adults, 2 tablets three or four times daily; children (5 to 12 years), 1 tablet three or four times daily. Each tablet contains 300 mg. of aspirin and 50 mg. of Trancopal (brand of chlormezanone). Bottles of 100 tablets. Before prescribing be sure to consult Winthrop's literature for additional information about dosage, possible side effects and contraindications.

**Winthrop** LABORATORIES  
New York 18, N.Y.

1572M

**HOUSE OF DELEGATES***continued from page 654***Social Welfare Committee**

The president noted that the report of the Committee on Social Welfare was included in the handbook.

*Action:* A motion was made, seconded and passed that the report of the Committee on Social Welfare, as presented, be received and placed on file.

**Prevention of Athletic Injuries**

The report of the Committee on the Prevention and Treatment of Athletic Injuries was distributed to the members of the House.

*Action:* A motion was made, seconded and passed that the report of the Committee on the Prevention and Treatment of Athletic Injuries be received and placed on file.

**Public Information Committee**

Doctor Seebert J. Goldowsky addressed the House on the need for a public information committee to inform the public generally, and legislative groups in particular, of the views of the medical profession. The subject was discussed.

*Action:* A motion was made that the president of the Society be authorized to appoint a committee of ten (10) from the membership to form a Com-

WILLIAM H. *Harris*  
New England's Largest Exclusive Furrier  
400 Westminster Street

Our Mink collection of  
lovely scarfs, stoles, jackets  
and coats is priced from  
\$99. to \$6950.

ATTENTION  
MEN!

Your selection held  
and gift wrapped for  
Christmas. Any  
purchase cheerfully  
exchanged within one  
week after Christmas.  
Trained gift counsellors  
will assist you.  
Charge or Budget  
Terms Available

anything  
darling...  
as long as  
it's a  
harris  
mink

**RHODE ISLAND MEDICAL JOURNAL**

mittee on Public Information whose function would be to convey information to the public generally and to federal, state and local legislative bodies regarding medical matters. The motion was seconded and adopted.

**Adjournment**

The meeting was adjourned at 10:00 P.M.

Respectfully submitted,

MICHAEL DiMAIO, M.D., Secretary

**REPORT OF THE SECRETARY**

At meetings of the Council held since the April meeting of the House of Delegates, the following were among actions taken:

1. The Sesquicentennial Committee was requested to arrange for admission to the Health Exposition to be held in April, 1962, by tickets distributed through physicians' offices, pharmacies, industry, etc., but no admission fee to be charged.
2. Approval was given the president's suggestion to the governor of the state that Doctors Gary Paparo and Herbert Fanger be considered as members of the Advisory Committee in charge of establishing regulations for clinical laboratories under the legislative act passed by the General Assembly this year.
3. Appreciation was voted for the Society to the Woman's Auxiliary for its contribution to the Benevolence Fund of the Society.
4. The president was authorized to submit the names of three members of the Society to the State Director of Health, one of whom would be named as a member of the Committee on Consultation to the Board of Nurse Registration and Nursing Education.
5. The list of medical specialties as adopted by the American Medical Association was approved as the pattern for the listing of specialties of members of the Rhode Island Medical Society in the roster to be issued by the Society.
6. Approval was given the topics proposed by the Trustees of the Fiske Fund for the 1961 Prize Essay Contest.
7. Approved of plans for a Family Day for physicians and their families to be sponsored by the auxiliary, and held on Sunday, October 15, at Coventry.
8. Reviewed and approved of the financial reports of the treasurer, and a proposed budget for the Society for 1962.
9. Authorized the president to send a covering letter to the membership regarding the Sesquicentennial assessment, and the Society plans for the Health Exposition, and further voted

- that the Sesquicentennial assessment, already approved by the House of Delegates for a maximum of \$20, be paid by November 1, 1961.
10. Approved of a follow-up program of children for a scarlet fever study to be undertaken by the division of maternal and child health of the State Department of Health, and also of a statewide detection program for PKU by the same division.
  11. Approved of a planned survey by the State Department of Health to determine morbidity reporting of venereal diseases.
  12. Voted to refer to the House of Delegates a State Health Department proposal for a glaucoma detection program.
  13. Authorized the president to appoint three delegates to represent the Society at a meeting October 11 in Boston, sponsored by the Council on Medical Education and Hospitals of the A.M.A.
  14. Named Doctor Earl J. Mara as the Society's representative to attend the A.M.A. Second National Congress on Prepaid Health Insurance to be held in Chicago.
  15. Authorized the president to name a committee of three to consider a proposal for a tuberculosis control program.
  16. Voted to refer to the House of Delegates a request that the Society nominate three candidates from whom one would be chosen chairman of the Rhode Island Advisory Committee to the Selective Service System.
  17. Approved of the president's appointment of Dr. James McGrath of Wakefield as trustee-at-large of the Board of Trustees of the Medical Library for the year 1962.
  18. Approved of the report of the chairman of the Board of Trustees of the Medical Library relative to repairs to the Society's property.

MICHAEL DiMAIO, M.D., *Secretary*

#### **REPORT OF THE TREASURER**

##### *Appraisal of Investments*

The latest appraisal of the market value of the invested funds of the Society supervised by the Trust Department of the Industrial National Bank, as of August 11, 1961, is submitted as part of this report.

The Trust Department of the bank makes no recommendations of changes in investments as they consider that they "all seem suitable for retention at this time."

##### *Budget for 1962*

In accordance with the bylaws, I submit a pro-

posed budget for the year 1962 for the Society which has already been reviewed by the Council and approved by it. The budget reflects the operating costs of this and previous years, and no important changes have been made over that of the current year.

##### *A.M.A. Dues to Increase*

The American Medical Association has notified us that its House of Delegates has voted that the annual A.M.A. dues shall be increased to \$35 in 1962, and to \$45 in 1963.

J. MURRAY BEARDSLEY, M.D., *Treasurer*

#### **CANCER COMMITTEE**

The Cancer Committee of the Rhode Island Medical Society held an interim meeting in July in conjunction with the Committee on Professional Education of the American Cancer Society.

Two films were shown dealing with the diagnosis of rectal malignancy, and an active discussion of these films followed.

It was decided to meet with the president of the Rhode Island Academy of General Practice to determine whether or not our Cancer Workshops in the fall should be oriented in this direction.

Further details will be forthcoming following this meeting with Doctor Charles Farrell.

Respectfully submitted,  
HENRY C. McDUFF, JR., M.D., *Chairman*

#### **DIABETES**

The Committee on Diabetes has active plans for National Diabetes Detection Week, November 12-18, 1961.

On Sunday, November 12th, the 455th General Hospital, U.S.A.R. will hold a fair at their training center on Sandy Lane in Warwick (Doctor Peter Erinakes, chairman).

On Wednesday, November 15th, a fair will be held at St. Joseph's Hospital (Doctor Albert Tetreault, chairman).

It is hoped also that there will be a fair again this year in Newport.

Respectfully submitted,  
WILLIAM L. LEET, M.D., *Chairman*

#### **MEDICAL ECONOMICS**

The Committee on Medical Economics reports on the following matters:

##### *Group Health and Accident Insurance*

An agreement has been reached with the Continental Casualty Company for them to assume the entire risk under the disability insurance program initiated by the Providence Medical Association and made available also to members of the Rhode

*continued on next page*

Island Medical Society outside the Providence district. Previously the Bankers Security Life handled the "extended coverage" phase of the program.

#### *Group Blue Cross and Physicians Service*

Renewal notices, as well as opportunity for new members of the Society to enroll, have been mailed this month for the group Blue Cross-Physicians Service program which is available to the Society members on a group basis, providing comprehensive plan rates for the Blue Cross \$20 per diem plan, and the Physicians Service "A" Plan. A majority of the membership has availed itself of this program which is handled by the Executive Office of the Society as a service to the membership.

#### *Medicare Fee Schedule*

Although the Rhode Island Medical Society did not enter into a formal contract with the federal government for the Dependents Medical Care Program which has encountered its share of problems nationally, a fee schedule was imposed for services rendered in this State by Rhode Island physicians. Over a year ago the program was curtailed and most of the eligible recipients have been required to utilize the government medical installations at Newport and the Quonset Air Station. However, many continue to be attended by private physicians.

Announcement has been made within the month that no longer can the Medicare schedule of maxi-

#### RHODE ISLAND MEDICAL JOURNAL

mum allowances be sent to physicians. The same schedule of maximum allowances used in the past will continue in use.

The physician providing care for Medicare recipients should bill his usual or normal fee for like services provided to an individual with an annual income of \$4,500 or less.

#### *Relative Value Schedules*

At least two years ago the Society eliminated all fee schedules such as the one previously developed for wards of government, and the one suggested as a guide to prevailing charges in the area.

A year ago representatives of the Society attended a regional meeting sponsored by the American Medical Association in Boston to discuss the development of relative value schedules. At that time the Society representatives found no satisfactory reasons for the development of that type of schedule in Rhode Island.

In April of this year the National Association of Blue Shield Plans, by action of its board of directors, voted the establishment of "a composite professional service index"—in effect a national relative value study—to enable Blue Shield to sell and service nationwide accounts. Although approved by the national body, the index must now get similar approval at the local level to become effective.

Your Committee has reviewed this problem and it has voted that it objects to the imposition of a relative value service index for the Physicians Service program in Rhode Island.

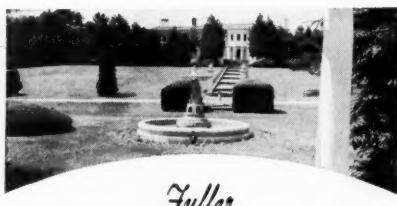
#### *Physicians Service Fee Review Committee*

At the April meeting of the House of Delegates it was voted that the Committee on Medical Economics of the Society consider feasible mechanisms for the establishment of a fee review committee, and that it report to the House of Delegates its recommendations.

Your Committee has given this matter much study, and it has unanimously adopted the following recommendation which it submits to the House:

*WHEREAS*, the House of Delegates has established as an elected standing committee of the Society the Committee on Medical Economics and has charged that committee with the duty of studying and investigating such phases of general economics as have a bearing on the practice of medicine, and

*WHEREAS*, the subject of fees for service rendered by physicians is the basic and paramount economic phase of the practice of medicine, *THEREFORE*, the Committee on Medical Economics is firmly of the opinion that it is constituted adequately to be the permanent fee schedule committee of the Society to review all existing or proposed fee schedules with the aid of the membership, individually and through organized spe-



*Fuller*

### *Memorial Sanitarium*

**Located on Rt. 1**

**South Attleboro, Massachusetts**

A modern non-profit hospital for the care and treatment of nervous and emotional disorders as well as long term geriatric problems.

Physical, neurological, psychiatric and psychological examinations.

Modern recognized psychiatric therapies.

A pleasant homelike atmosphere in a beautiful and conveniently located institution.

L. A. Senseman, M.D., F.A.P.A., Medical Director  
Edwin Dunlop, M.D. Michael G. Touloumtzis, M.A.  
Oliver S. Lindberg, M.D. William H. Dunn, M.S.W.  
Burtis Ingersoll, M.D.

Referred patients are seen daily (except Saturdays) 9-12 A.M.,  
and by appointment.

R. I. Blue Cross Benefits Tel. Southgate 1-8500

Special Rates for Long-Term Care

cialty groups, and to make recommendations based on its findings to the House of Delegates of the Society.

#### *Medical Care for the Older Age Person*

Your Committee has on previous occasions reviewed at length the status of medical care for the older aged citizens of Rhode Island. We call attention at this time to the interesting report of Blue Cross-Physicians Service on their coverages for the over age 65 subscribers, as reported in the special report submitted at the public hearing called by the director of Business Regulation of the state a week ago.

We feel that the state administration of Rhode Island has been biased in its urging for the passage of the King bill in the present Congress to provide old age medical care benefits through the social security system, while currently the people of Rhode Island are paying their share of the federal tax to provide the funds for the operation of the Kerr-Mills bill passed by the Democratic Congress a year ago whereby needy old age persons may be provided hospital and medical care assistance.

We feel that the Society has reason to be sharply critical of the failure of the General Assembly and the governor to act in regard to this bill, and we feel that the State Division on Aging, whose administrator traveled to Washington to testify for the King bill now before the Congress, has been derelict in its task if it truly believes that there are older aged persons lacking medical attention in this state when there are available funds to alleviate any such situation.

#### *Report of the Director of Business Regulation*

On Sunday, September 17, the PROVIDENCE SUNDAY JOURNAL published parts of a report credited to Mr. Harold Arcaro, state director of business regulation, in apparent defense of his position and views regarding the rate charges for Blue Cross and Physicians Service subscribers.

Your Committee has not had available to it the complete report of Mr. Arcaro. On the basis of the newspaper account, however, we are of the opinion that the Society should take definite steps to review the report and to challenge, correct and refute any freely asserted generalizations not substantiated by factual evidence.

#### *Investment Program for Society Members*

Your Committee, after completing its poll of the membership regarding its proposed investment program to be sponsored by the Industrial National Bank and the Hospital Trust Company, worked with bank officials during the summer months on details of the plan. A special announcement has been prepared for distribution to the members of the

*continued on next page*

## AS CLEAN AS MODERN DAIRY SCIENCE CAN MAKE IT...



The A. B. Munroe Dairy Laboratory, where milk is subjected to constant testing, using the most modern methods of milk analysis.

Through every step in processing, from the immaculate receiving room to pasteurizing and homogenizing, on through bottling and refrigeration, the A. B. Munroe Dairy observes the strictest standards of dairy hygiene. The spotless surroundings and rigid quality control are so designed that all A. B. Munroe Dairy products that reach your table are as fresh, wholesome and pure as modern science can make them.

**A. B. MUNROE DAIRY, INC.**  
151 Brow Street, East Providence, Rhode Island

**Call GE 8-4450  
for Home Delivery**

Society to answer questions relative to the operation of the program.

Respectfully submitted,  
STANLEY D. SIMON, M.D., *Chairman*

### MENTAL HEALTH

The Committee on Mental Health has been active in improving the return on your many tax dollars spent for the care and treatment of patients at the State Hospital for Mental Diseases. In 1960, 1,647 patients were admitted; 3,236 patients were in residence. During 1959-60 the Committee was accorded the opportunity to advise and assist the Department of Social Welfare in instituting fresh faces and perspectives with the Medical Administration of the State Hospital for Mental Diseases.

Came 1961 and a change of administration of the Department of Social Welfare. The vigorous new Medical Administration was subjected to harassment in its primary mission of the care and treatment of patients. The usual type of human relationship in the domain of politics consists of favoring a diligent party worker with a governmental job, commonly with a disparity in training, experience and merit in the job requirements. As physicians, you are keenly aware that this patronage type of relationship results in the primary mission of the care and treatment of patients becoming incidental—with the patient becoming a victim. Traditionally, and exceptionally, the State Hospital has been off limits for political patronage. This tradition came to be disregarded.

With this happening, the Committee on Mental Health arranged a meeting with Mr. Albert Russo, the director of the Department of Social Welfare. This was held on Tuesday, June 20, 1961. In substance, a stand was taken on the issue of patronage. The combined training and experience of the Committee was made available. The principle was elucidated that the State Department should aid and abet the functioning of the Medical Administration at the Hospital rather than dictate. The employment of physicians devoid of training and specialization in Psychiatry was stated to be unwise. There was discussion with a view to attracting more capable physicians to the State Hospital. The participation of practicing physicians in the specialty of psychiatry in an active consultation capacity was endorsed. The Department of Social Welfare sought another meeting.

Meanwhile, the Rhode Island Association for Mental Health, Inc. became incensed with respect to the patronage issue. Since co-operation of the Department of Social Welfare was assured, the Rhode Island Association for Mental Health, Inc. graciously withheld separate action to avoid confusion and disparity of action. A public letter of com-

mendation to your Committee was issued by this Association.

A second meeting was held on July 25, 1961 at the State Hospital. The superintendent of the State Hospital, Doctor Sidney Goldstein, was invited. The president of the Rhode Island district branch of the American Psychiatric Association, Doctor Barry Mongillo, joined forces with your Committee. Doctor John J. Pelosi, the new director of state institutions, was present. Specific proposals were made to aid the State Hospital in regarding the good professional reputation it had possessed prior to World War II. A subcommittee, headed by Doctor David Fish, was formed to give continuity to the effort which had been set in motion. The principle was reiterated that specialization is a prerequisite to the employment of physicians above the level of residency, even though vacancies had in fact existed for some time.

In an informative sense, the Committee wishes to report of a new concept which has been further extended by the present administration within the scope of the state's traditionally assumed financial responsibility for the care and treatment of patients with mental disorders. Relatives and patients are being required to pay within their means for the care of patients at the State Hospital. The Out-patient Service, known as the Mental Hygiene Services and located at Butler Health Center, will make charges for diagnostic and treatment work. Your Committee is of the opinion some recovery of tax funds expended is desirable, that patients on the whole are better motivated when they pay for services rendered, but has certain reservations that the state is intruding into the practice of medicine.

The Committee desires to call to the attention of the House of Delegates the final report of the Joint Commission of Mental Illness and Health. This report of the Joint Commission is the resultant of the Mental Health Study Act of the Congress of these United States. It should be studied. There is the matter, for example, that many people, including physicians, find it hard to recognize psychological illness as illness.

Your Committee would like to have the House of Delegates pass a Resolution and have said Resolution sent to Mr. Albert Russo, director of the Department of Social Welfare. The statement is derived from the final report of the Joint Commission of Mental Illness and Health:

*RESOLVED* that the State Hospital must cease to be treated as a target for political exploitation.  
*RESOLVED* that the professional care of the patient be distinguished from the administrative responsibility for his welfare and safe keeping.

Respectfully submitted,  
HAROLD W. WILLIAMS, M.D., *Chairman*

## PREVENTION AND TREATMENT OF ATHLETIC INJURIES

The Committee on the Prevention and Treatment of Athletic Injuries of the Rhode Island Medical Society in conjunction with the Rhode Island Secondary School Principal Association's Committee on Athletics held a one-day conference at Providence College on September 11, 1961.

The meeting started at 1:00 p.m. in Albertus Magnus Hall with registration. Joseph P. Delaney, chairman of the Principals' Committee on Athletics, opened the conference at 1:30 p.m. and was followed by Very Reverend Vincent C. Dore, O.P., president of Providence College, who extended the greetings of the College to the group. Doctor Samuel Adelson, president of the Rhode Island Medical Society, was unable to attend but was ably represented by Doctor Frank I. Matteo who extended the greetings of the Rhode Island Medical Society.

About 125 persons attended, the registrants including school nurses, school physicians, coaches, athletic directors, trainers and physical education teachers.

The scientific phase of the meeting was opened at 1:30 p.m. by Doctor A. A. Savastano, orthopedic surgeon, Department of Athletics and Student Health, University of Rhode Island, whose lecture dealt with *Keeping the All-Scholastic Candidate Active*. This was followed by a lecture by Doctor William J. Schwab, assistant director of Student Health Services, Providence College, who spoke on *The Importance of a Good Physical Examination*.

Doctor G. Edward Crane, athletic surgeon, Brown University, spoke on *The Recognition of Types of Injuries*.

After an intermission the following panels on special problems were represented: Dental Injuries by Vincent J. Oddo, Jr., D.D.S., member of the Medical Advisory Board, National Boxing Association; Eye Injuries by Doctor Alexander Calenda, junior assistant surgeon, Department of Ophthalmology, Rhode Island Hospital; Ear, Nose and Throat Injuries, Doctor Nathan A. Bolotow, F.A.C.S., attending surgeon, ENT, Miriam Hospital; Head Injuries, Doctor Julius Stoll, Jr., chief of Department of Neurosurgery, Rhode Island Hospital; Pre-game Diets, Doctor S. J. P. Turco, medical director, University of Rhode Island; The First Aid Room, Doctor Joseph E. Donahue, assistant director of Student Health Services, Providence College.

During the latter part of the afternoon a good demonstration was given on *Protective Equipment for the Athlete* by Ken MacAfee, former outstanding member of the New York Football Giants and Washington Redskins. Mr. L. S. Nelson, former

*concluded on next page*

## APPLY NOW!

FOR TENANCY IN

## NEW PROFESSIONAL BUILDING

(To be built in Spring of 1962)

### A Physicians' Laboratory

Service will

occupy space in building.

Reservoir Avenue,

Junction Pontiac,

Providence

(Central point on Freeway Interchanges)

HO 1-6086

## LIFE DEATH INSURANCE or INSURANCE?

SOME Medical men need DEATH Insurance ONLY.

Others need accumulating, guaranteed dollar values to meet their LIVING needs in the future — DEPRESSION — EMERGENCY — RETIREMENT, etc.

In any event, our new "CHEAPER-THAN-TERM" DEATH INSURANCE is the first step in the right direction!

Don't make any important changes in your Life Insurance or Estate plans without investigating "CHEAPER-THAN-TERM"!

For further information about this sensational new development in DEATH INSURANCE, write or phone:

**ROLAND A. DEROSIER**

32 Custom House Street  
Providence 3, Rhode Island

GA 1-1391

football coach at Norwich University, assisted in the demonstration and lecture.

After a dinner in the Raymond Dining Hall of Providence College, the evening phase of the program was started with a demonstration on proper bandaging and taping in order to prevent athletic injuries. This was presented by Richard Cole, associate professor of Physical Education and athletic therapist at the University of Rhode Island, and Pete Louthis, head athletic trainer at Providence College.

The last lecture of the evening was given by Mr. Stephen E. Witkowski, head trainer, Wesleyan University, Middletown, Connecticut. Mr. Witkowski spoke on *Proper Preparation for Strenuous Exercise*. Mr. Witkowski was the featured speaker of the evening as he was the head trainer of the United States Olympic Teams in both 1956 in Melbourne, Australia and in 1960 in Rome, Italy. He is the only man to hold the position twice. Mr. Witkowski is also well known as a bowler, having won the National Duckpin Championship in 1951.

The concluding portion of the meeting consisted of a question period at which time many interesting questions were asked of the speakers of the afternoon and evening sessions. It is felt that the meeting was exceptionally well attended, and many of those who attended expressed themselves as being very

well pleased with the meeting and hoped that there would be more such meetings in the future.

Respectfully submitted,

A. A. SAVASTANO, *Chairman*

Committee on the Prevention and Treatment of Athletic Injuries

### SOCIAL WELFARE

During the period March 9 through April 24 the Medical Bureau sent a questionnaire to physicians who accepted calls for a physician from persons without a family doctor who indicated an emergency illness necessitating a physician's services, and who were recipients of public assistance under the State Welfare program. Sixteen physicians reported a total of 116 such calls. The physicians reported that 61 patients could have gone to a doctor's office, or a hospital accident room that day or the next day, instead of calling the Bureau for a physician, whereas 53 could not have followed such a procedure. The physicians reported in answer to the inquiry whether they considered the call one for a real emergency, that 49 were real emergencies and 66 were not.

Presently the Medical Bureau, the Committee and the Medical Division of the Social Welfare Department are working together in an effort to improve and instruct welfare recipients in their responsibilities towards obtaining medical services.

The Department of Economic Research of the A.M.A. is collecting material for a study of "Means Tests" used by various government agencies—federal, state, and local—to ascertain the eligibility of individuals for public money or services financed with public funds. The Committee is working with the medical division of the Rhode Island Social Welfare Department on this project.

Respectfully submitted,

PETER L. MATHIEU, M.D., *Chairman*

**TESTIMANIMAL**



Feel hounded?  
Relax with some

**WARWICK CLUB**  
**GINGER ALE**

*It sings in the glass*



## Curran & Burton, Inc.

INDUSTRIAL  
AND WHOLESALE

**COAL**

17 CUSTOM HOUSE STREET  
PROVIDENCE, R. I.  
DExter 1-3315

**OIL**

## BOOK REVIEWS

*RYPINS' MEDICAL LICENSURE EXAMINATION: TOPICAL SUMMARIES AND QUESTIONS.* Edited by Walter L. Bierring, M.D. 9th ed. J. B. Lippincott Co., Phil., 1960. \$11.00

This newly revised and most up-to-date book of Rypins' original work is an aptly presented, concise collection of medical data in the basic sciences and in clinical medicine. Each subject has its authoritative summary and comprehensive questions covering the essential facts contained in these summaries. The initial article on *Medical Qualifying Examinations* has been revised in accord with the results of many examinations conducted recently by the Federation of State Medical Boards of the United States.

This very readable book should serve not only as an excellent tutor to medical students preparing for licensing examinations but also as a refresher course to the busy practitioner and to all doctors who have been out of touch with the latest developments in medical research.

While preparing the review of this widely known book, the death of its famous editor, Doctor Walter L. Bierring, has been reported. This Grand Old Man of the American medical profession has left us with a most valuable book, a lasting monument to its most distinguished author.

EARL F. KELLY, M.D.

*HANDBOOK OF SURGERY.* Edited by John L. Wilson, M.D., and Joseph J. McDonald, M.D. Lange Medical Publications, Los Altos, Calif., 1960. \$4.00

All interns and residents should have ready access to one of the several pocket reference handbooks available. The *HANDBOOK OF SURGERY*, edited by Wilson and McDonald, is an acceptable example of this class of book.

The usual subdivisions of the surgical field are presented, as are interesting sections on trauma, burn therapy, fluids and electrolytes, and a section on the standard, and some of the newer, drugs. The panel of authors is drawn from the San Francisco and Palo Alto areas. It is unnecessary to say that only superficial information, much of it in tabulated

form, is contained in this book; but to be serviceable as a handbook, it should contain no more. It is to be recommended.

JOSEPH E. CARUOLO, M.D.

*SOURCE BOOK OF MEDICAL HISTORY.*

Compiled with Notes by Logan Clendening, M.D. (Unabridged and unaltered republication of the work first published by Hoeber, N.Y., 1942) Dover Publications, Inc., N.Y., 1960. \$2.75

*EXPERIMENTS AND OBSERVATIONS ON THE GASTRIC JUICE AND THE PHYSIOLOGY OF DIGESTION* by William Beaumont. Facsimile of the original edition of 1833 together with a biographical essay A PIONEER AMERICAN PHYSIOLOGIST by Sir William Osler. Dover Publications, Inc., N.Y., 1960. \$1.50

*CLASSICS OF MEDICINE AND SURGERY.*

Collected by C. N. B. Camac. (Formerly titled: EPOCH-MAKING CONTRIBUTIONS TO MEDICINE, SURGERY AND THE ALLIED SCIENCES. Published originally by W. B. Saunders Co., Phil., 1909) Unabridged and unaltered republication. Dover Publications, Inc., N.Y., 1960. \$2.25

(1) This paperback reprint of a standard collection by the late Doctor Clendening of excerpts from the writings of the "greats" belies its modest price. It is well printed in legible type on paper of better quality than the usual paper-covered re-issue. One cannot review the contents as such for they represent the classic historical contributions from Hippocrates through Roentgen. For one who wishes to consult the founders of medicine in their own language, this volume provides a well-selected and handy reference.

(2) This, like Doctor Clendening's volume is a re-issue of the great classic of personal observations of the physiology of gastric digestion. The original has become quite expensive and this reprint, of excellent format, can well satisfy any but the bibliomaniac.

(3) This paperbacked volume, in the same format as the above, affords anyone the opportunity to possess a well-culled set of classic contributions at a reasonable price.

IRVING A. BECK, M.D.

## INDEX OF ADVERTISERS

	PAGE		PAGE
Ames Co.	608	Medical Clearing Bureau	616
E. P. Anthony	647	Medical Milk Commission	618
Armour Pharmaceutical Company	609	Munroe Dairy	659
J. E. Brennan	622	Parke, Davis & Co.	Inside Front Cover and 605
Burroughs Wellcome	653	Physicians Service	Back Cover
Curran & Burton	662	R. I. Hospital Trust Company	606
Derosier Agency	661	Roche Laboratories	624
Endo Laboratories	611	G. D. Searle	628
Florida Citrus Commission	621	Smith, Kline & French	619
Fuller Memorial Sanitarium	658	E. R. Squibb	627
Wm. H. Harris	656	Standard Brands	625
Industrial National Bank	610	Wallace Laboratories	617
International Latex Co.	614-615	Warwick Club Beverages	662
Lederle Laboratories	613, Third Cover	Winthrop Laboratories	623, 626, 655
Eli Lilly & Co.	Front Cover		
Medical Bureau	664		



**Wherever you go  
forget your telephone  
calls. We'll take them  
for you, day or night.**

**MEDICAL BUREAU  
of the  
Providence Medical Association**